

FIG. 1A

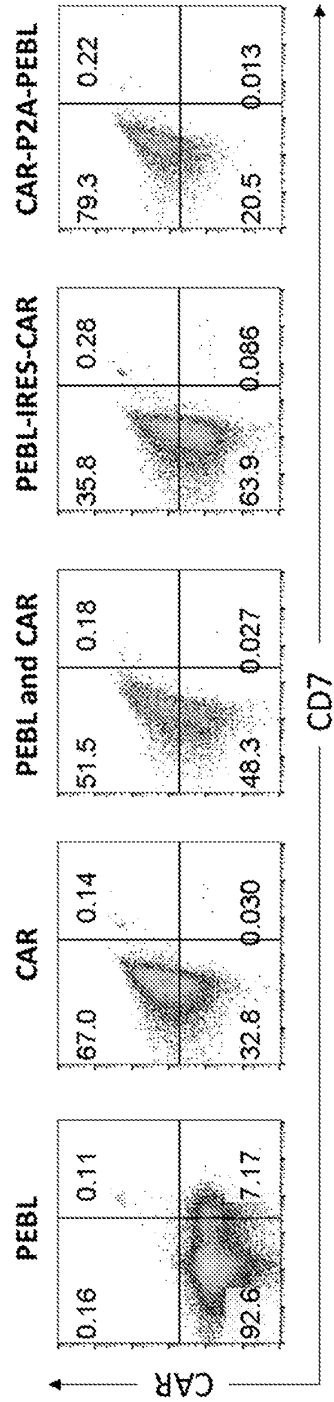
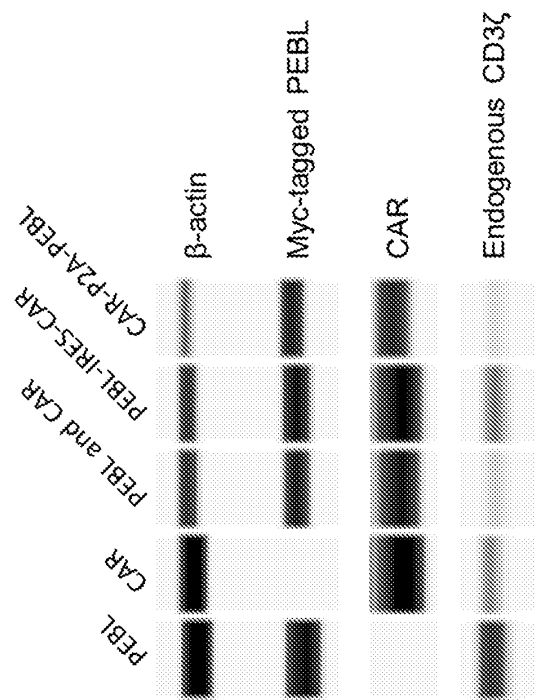


FIG. 1B



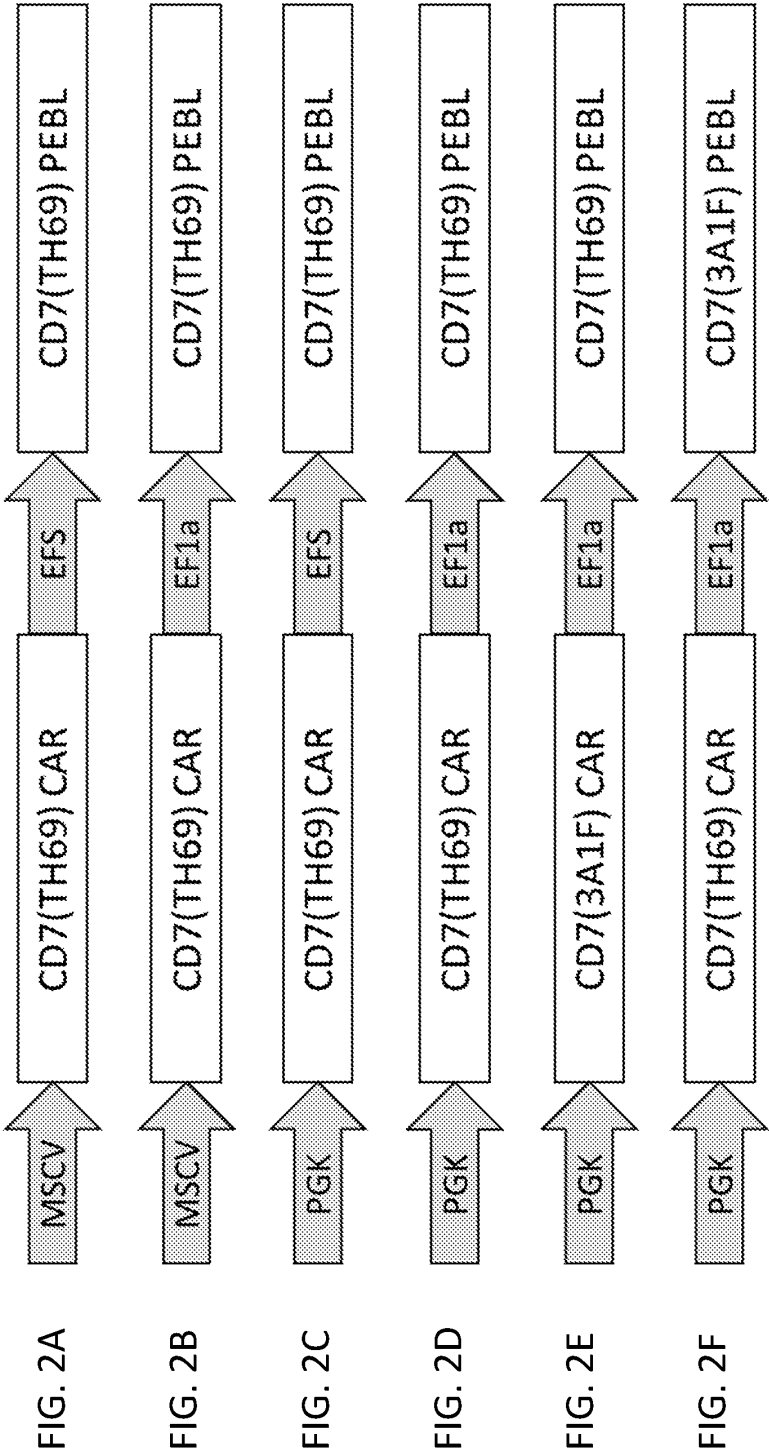
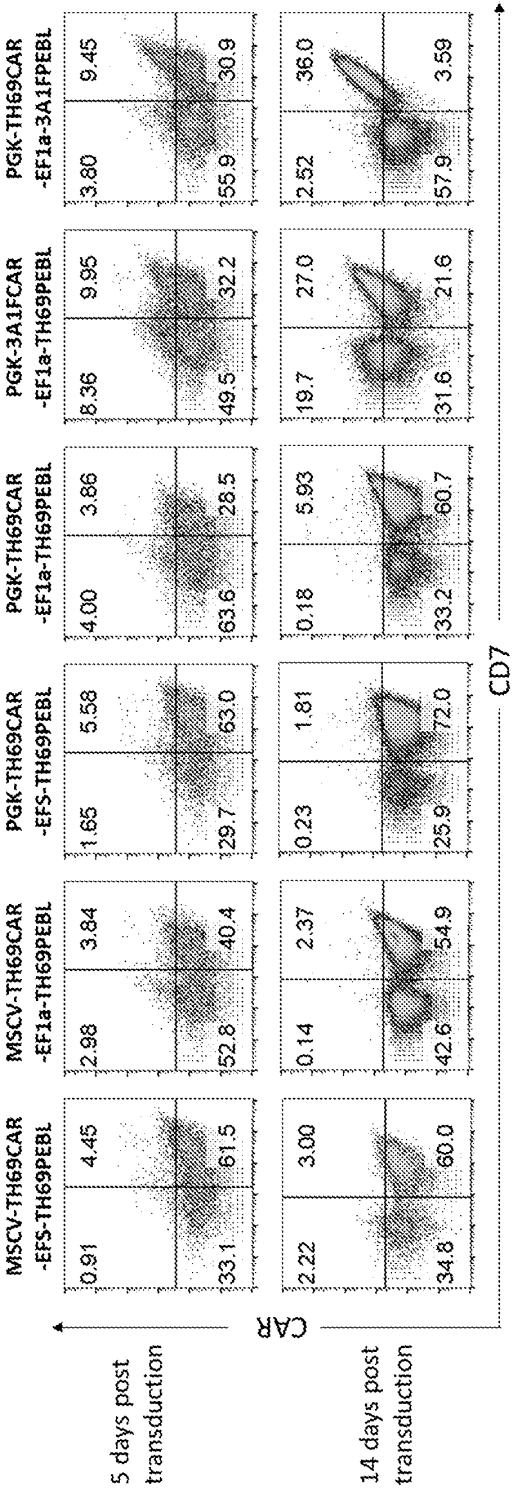


FIG. 3



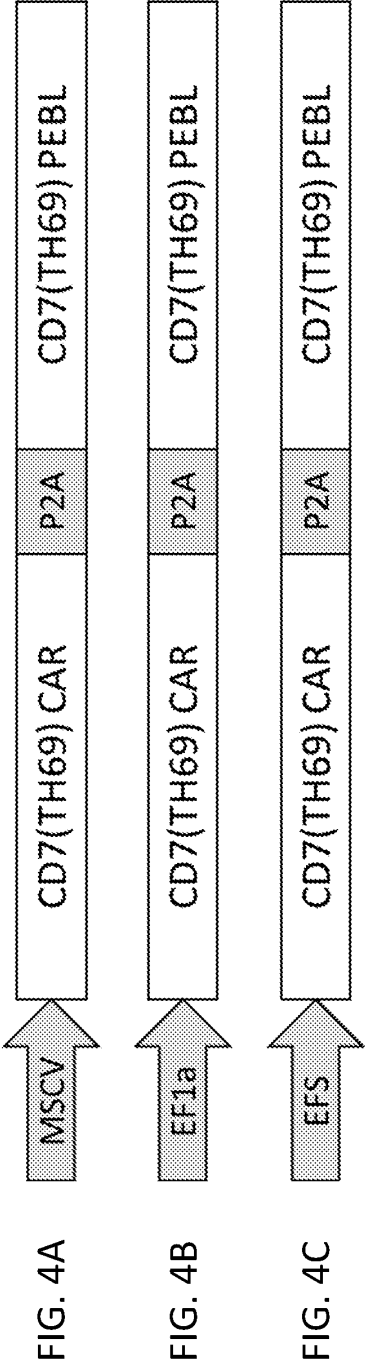


FIG. 5

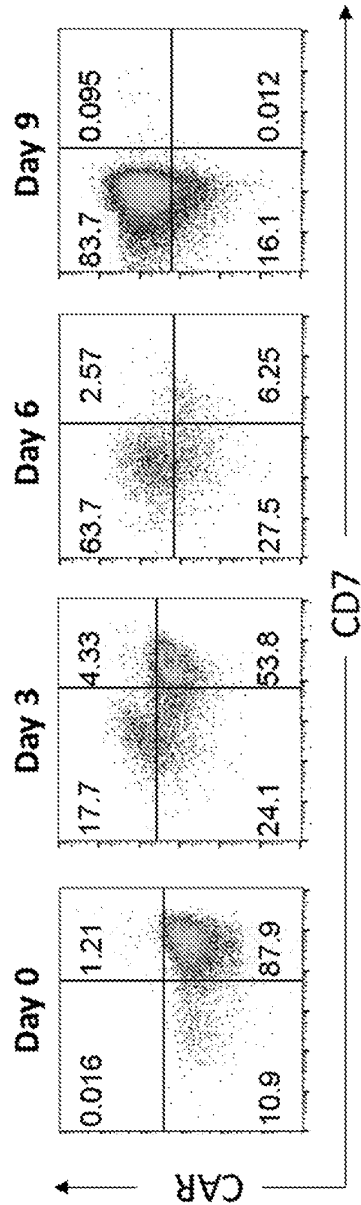


FIG. 6

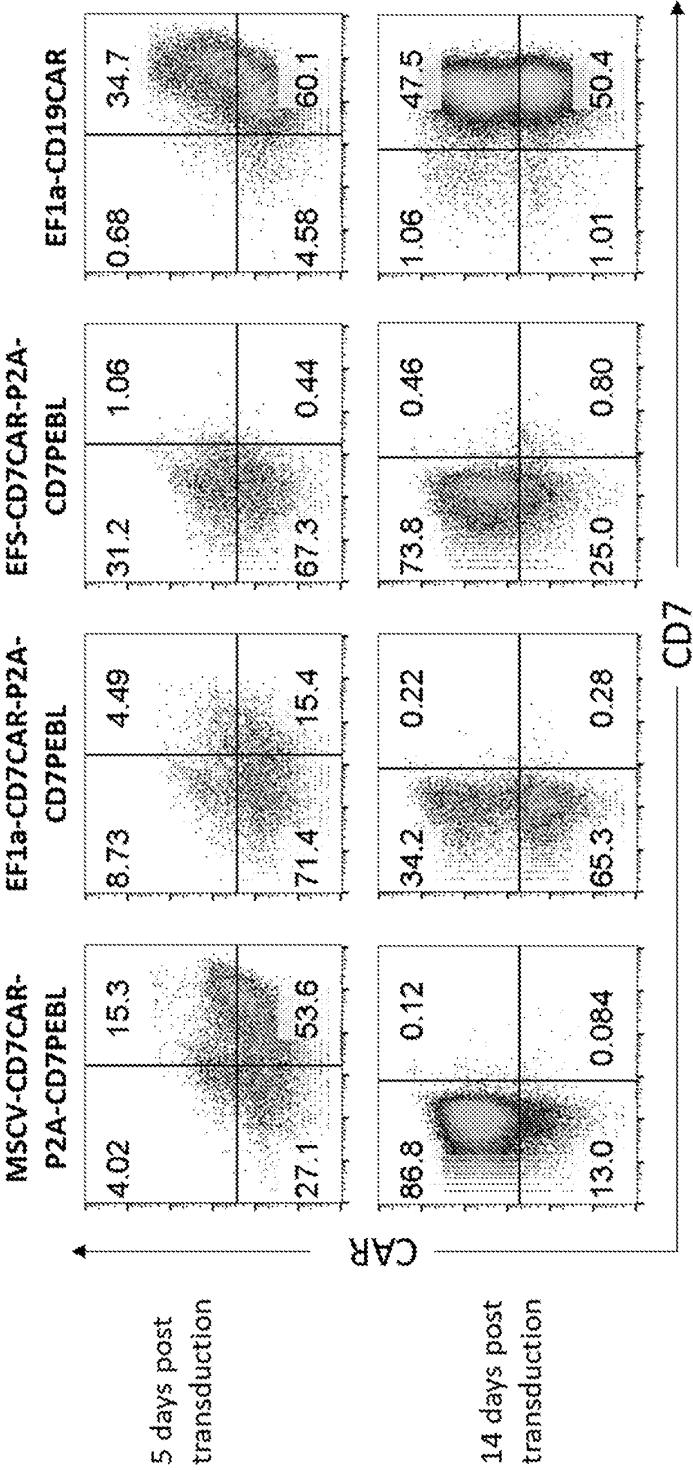


FIG. 7A

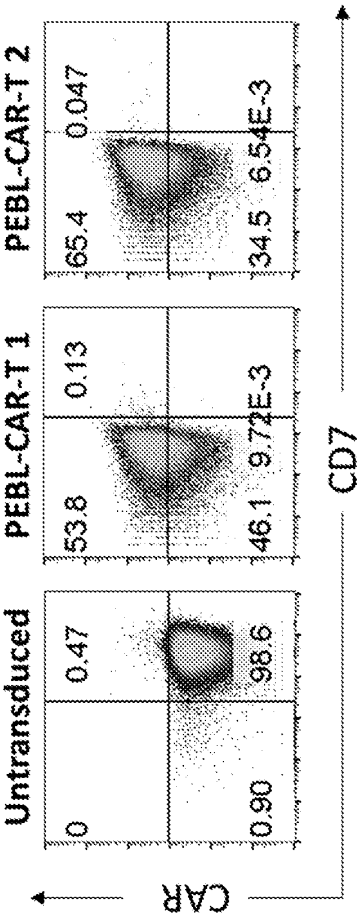


FIG. 7B

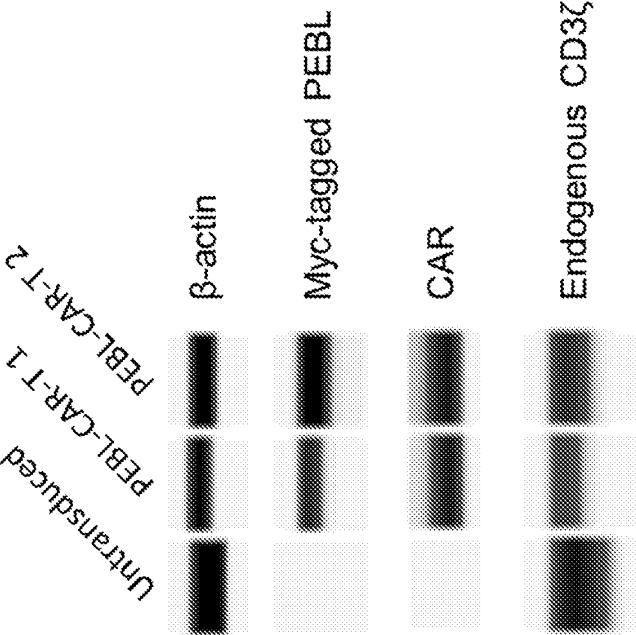


FIG. 8

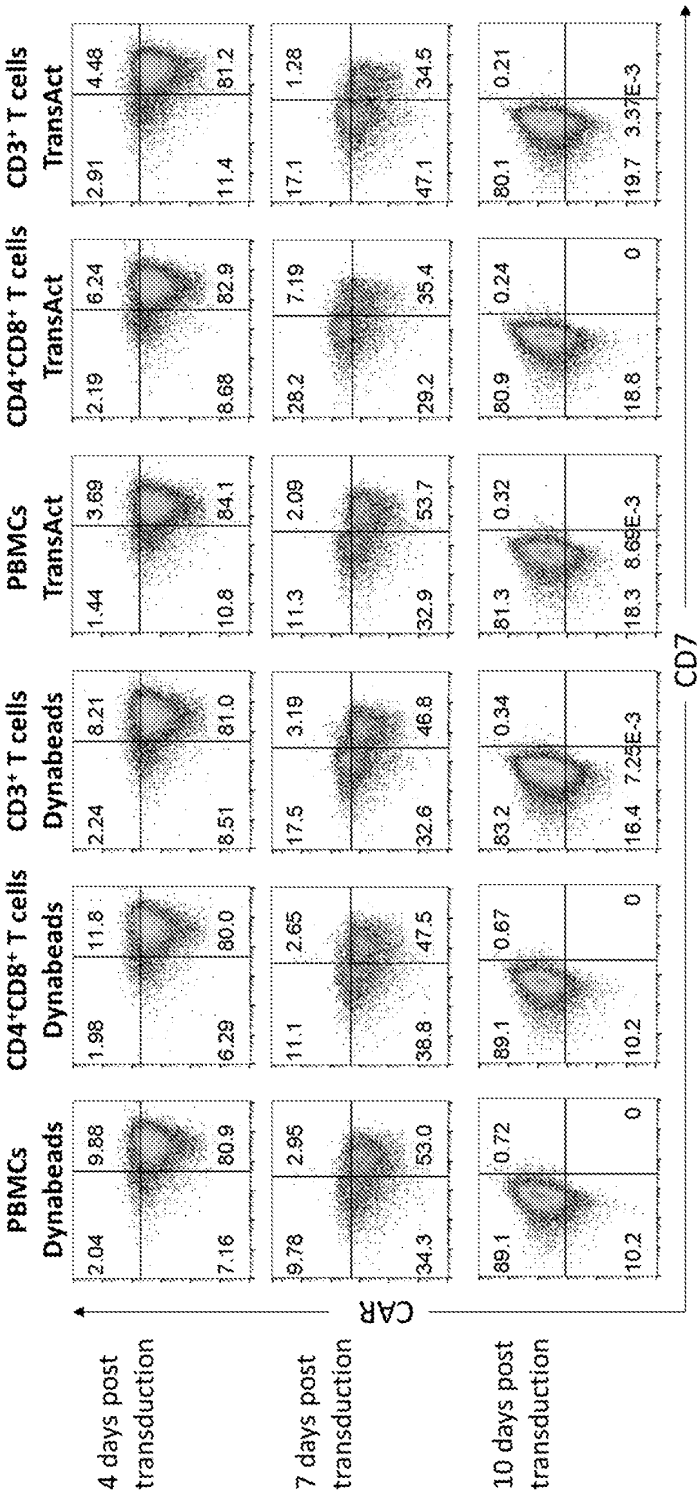


FIG. 9B

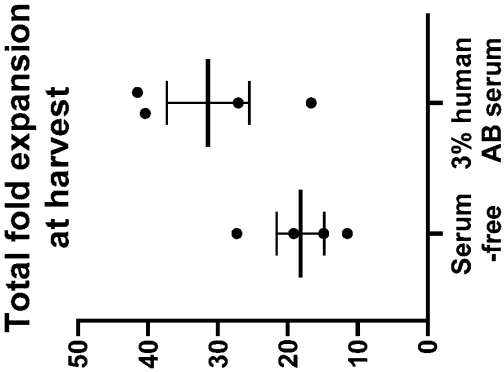


FIG. 9A

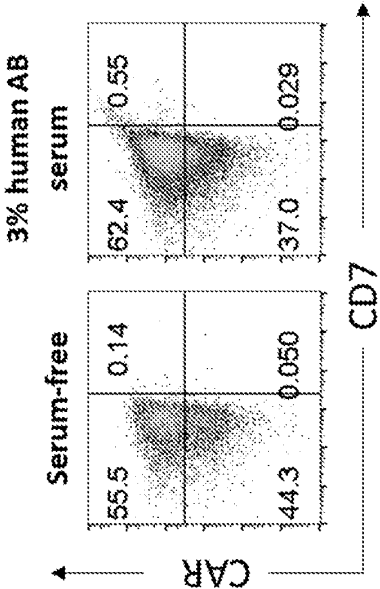


FIG. 10A

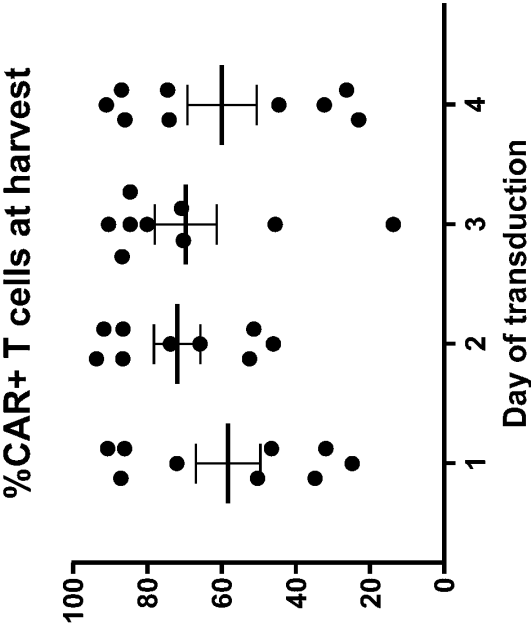
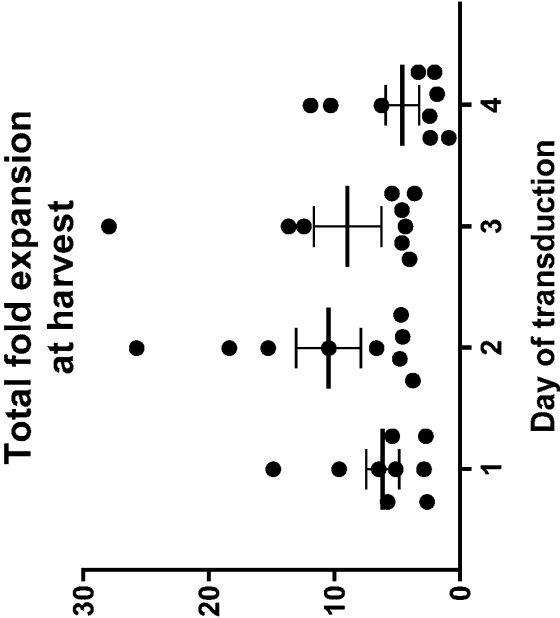
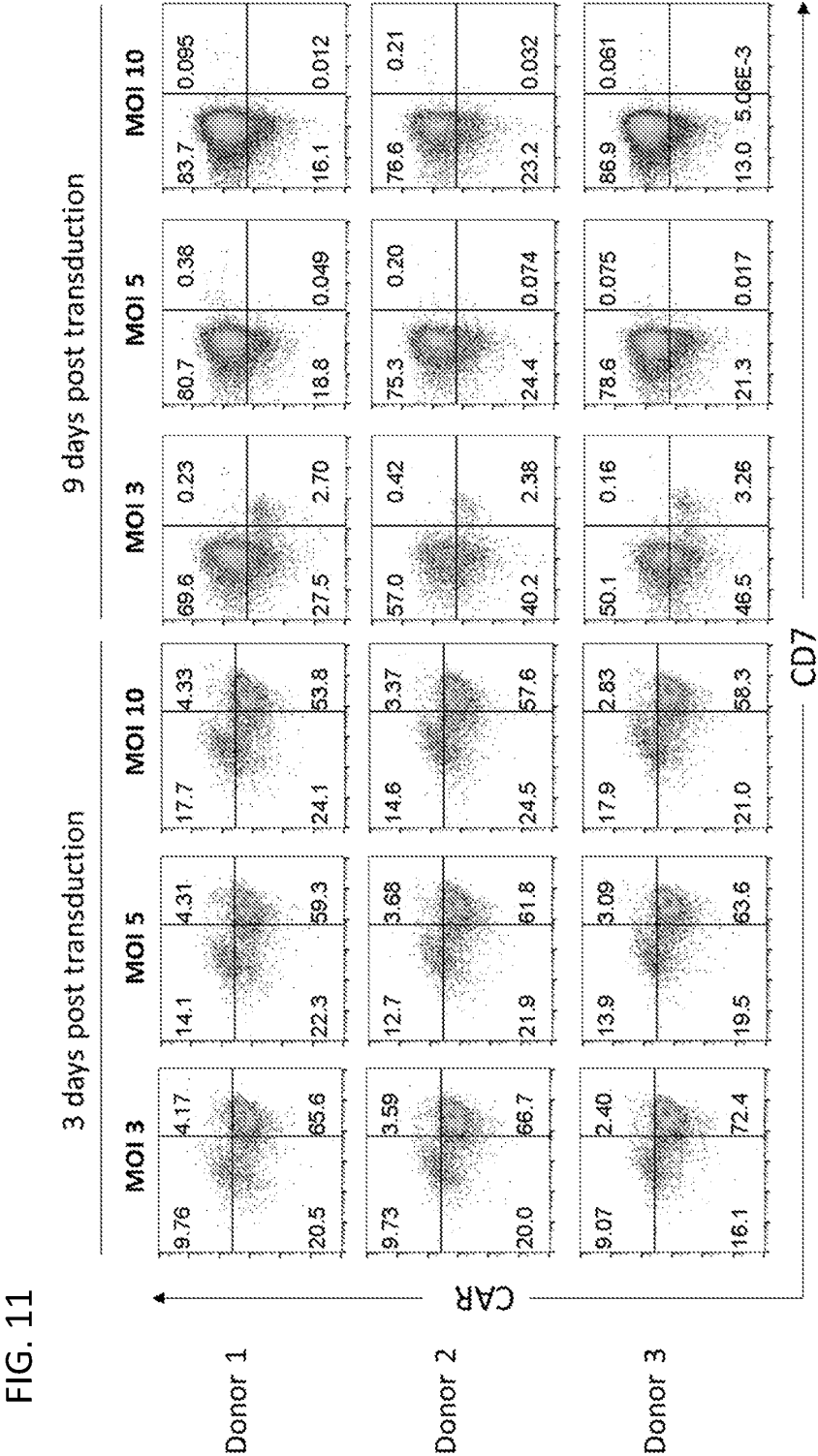
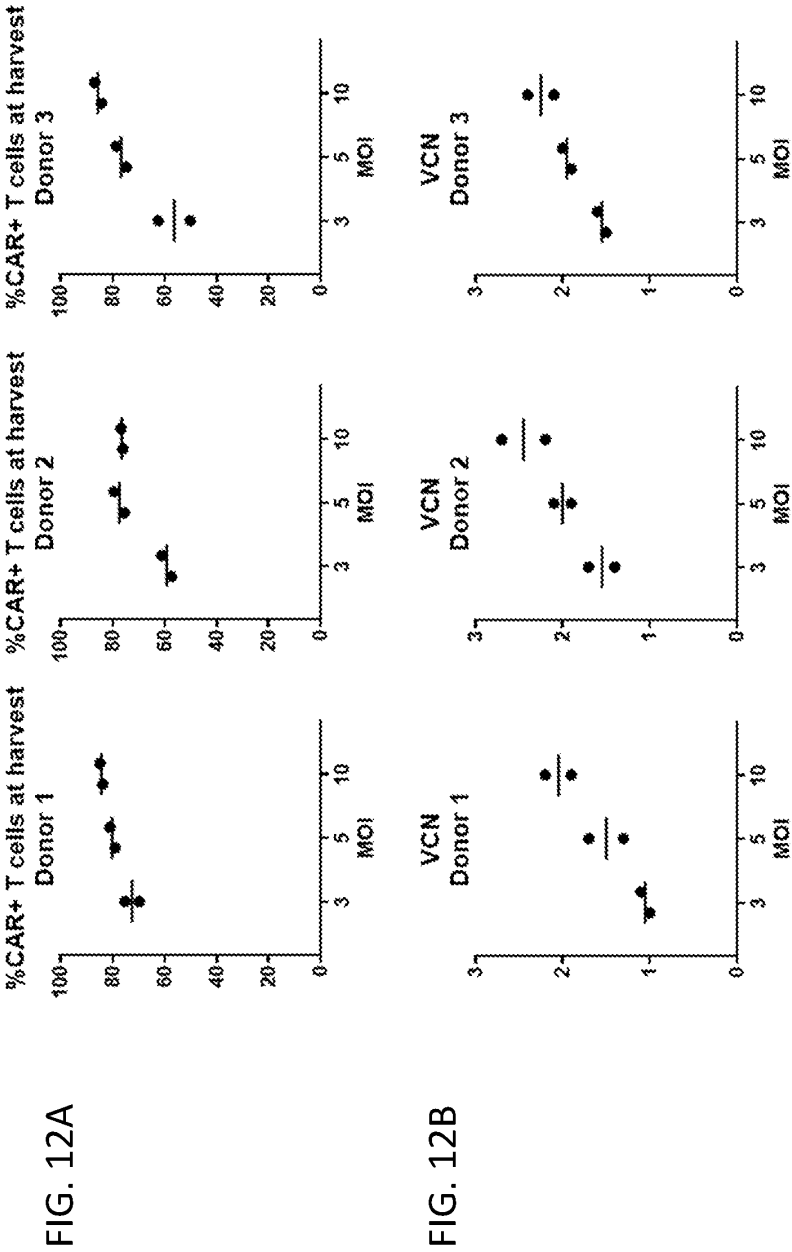


FIG. 10B







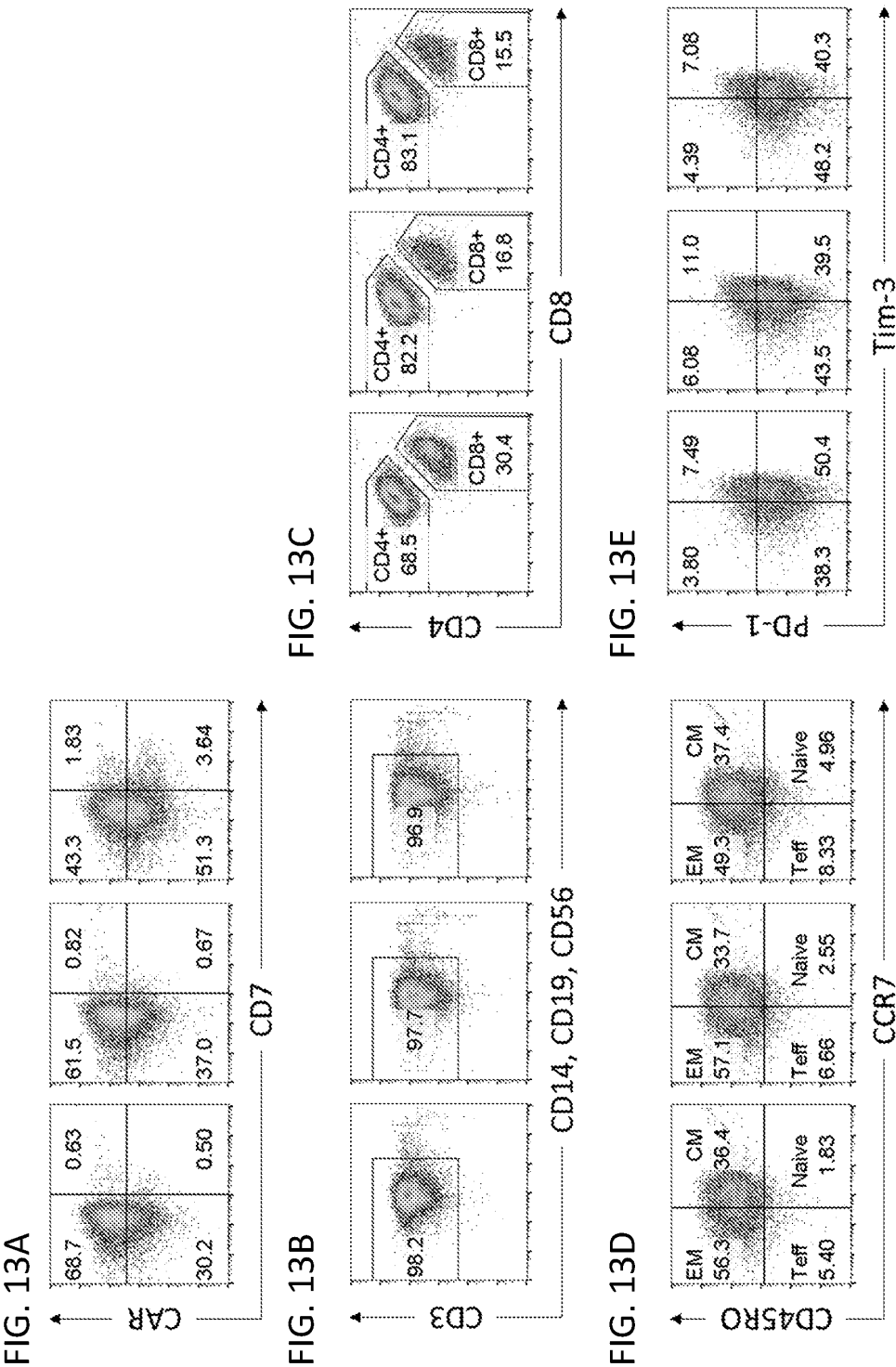


FIG. 14A

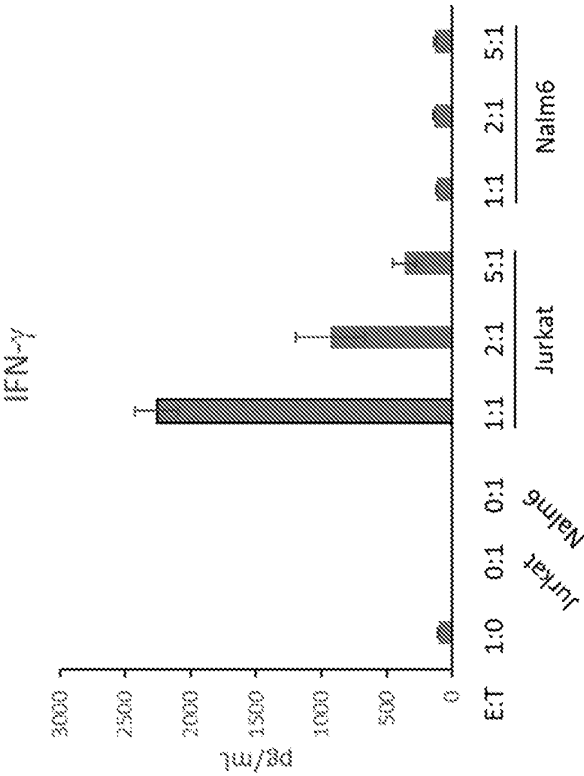
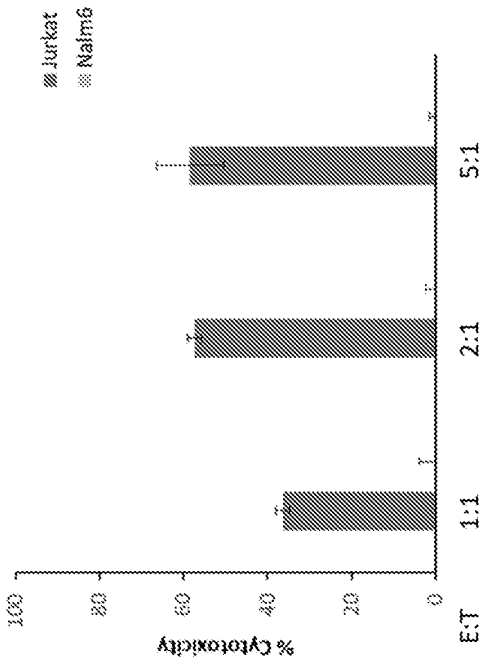


FIG. 14B



Jurkat: CD7+ T-ALL target cell-line
Nalm6: CD7- non-target cell-line

FIG. 15

CPPT-CMV-MCS-PGK-GFP-WPRE (SEQ ID NO:1)

1 ATCGATTTTA AAGAAAAGG GGGGATTGGG GGTACAGTG CAGGGAAG AATAGTAG AATATAGCAA CAGACATACA
81 AACTAAAGAA TTACAAAAC AAATTACAAA AATTCAAAAT TTTCCGGTTT ATTATTAAC AGGACATGC AGAGATCCAG
161 TTTAAAGCTTG GGAGTTCCGC GTTACATAAC TTACGGTAAA TGGCCCGCTT TGGCCCGCTT TGGCCCGCTT TGGCCCGCTT
241 ACCTCAATAA TGACGTATGT TCCCATAGTA AGGCAATAG GGACTTTCCA TTGACGTCAA TGGGTGGAGT ATTTACGGTA
321 AACTGCCAC TTGGCAGTAC ATCAAGTGA TCATATGCCA AGTAGCCGCC CTATTGACGT CAATGACGGT AAATGGCCCG
401 CTTGGCATTG TGGCCAGTAC ATGACCTTAT GGGCTTTTCC TACTTGGCAG TACATCTACG TATTAGTCAT CGCTATTACC
481 ATGGTGATGC GTTTTGGCA GTACATCAAT GGGCTTGGAT AGCGTTTGA CTCACGGGA TTTCACAAATG TCCACCCAT
561 TGACGTCAAT GGAAGTTTGT TTTGGCACCA AAATCAACGG GACTTTCCAA AATGTCTGTA CAATCCGCC CCATTGACGC
641 AAATGGGCGG TAGGCGTGA CCGTGGGAGG TCTATATAAG CAGAGTCTGT TTAGTGAACC GTCAGATCGC CTGGAGACGC
721 CATCCACGCT GTTTTACCT CCATAGAAGA CACGACTCT ACTAGAGGAT CGCTAGCGCT ACCGGACTCA GATCGAATTC
801 CTAAGCTTC CTCGAGTGA GTCACGCGG GCCCGGATC CCGCACTCT AGATAATCT ACCGGTAGG GGAGGCGCTT
881 TTCCCAAGC AGTCTGAGC ATGGCTTTA GCAGCCCGC TGGGCACTTG GCGCTACACA AGTGGCTCT GGCCTCGAC
961 ACATCCACA TCACCGGTA GGGCCCAACC GGTCCGTTT TTTGTGGCC CTTTCGCC ACCTTCTACT CTTCCCTAG
1041 TCAGGAAGTT CCCCCCGGC CGGACGCTCG CGTCGTGCG GACGTGACAA ATGGAAGTAG CAGCTCTAC TAGTCTGCTG
1121 CAGATGGACA GCACCGCTGA GCAATGGAA GGTGTAGGCC TTGGGGCAG CGGCAATAG CAGCTTGTCT CTTCCGCTTT
1201 CTGGGCTCAG AGGTGGGAA GGGTGGGTC CCGGGGGCG CTCAGGGCG GGTCTAGGG CCGGGGGGG GCGCGAAGGT
1281 CTTCCGGAG CCGGGCATTC TGCAAGCTTC AAAAGCGCA GTCTCGCG CTGTCTCTCT CTTCTCATC TCCGGGCTT
1361 TCGACTGGC ACCGGCTTC ACCATGGTGA GCAAGGGCGA GGAGTGTTC ACCGGGTGG TCCCATCTCT GGTCTGAGCTG
1441 GACGCGACG TAAACGGCA CAAGTTCAGC GTGTCCGGC AGGGGAGGG CGATGCCACC TACGGCAAGC TGACCTGAA
1521 GTTCATCTGC ACCACCGCA AGCTGCCCTG GCTTCGTCG ACCCTGTGA CCACCTGAC CTACGGCGTG CAGTGTCTCA
1601 GCGCTACCC CGACACATG AAGCAGCAG ACTTCTCAA GTCCGCCATG CCGGAAGCT ACCTCCAGGA GCGCACATC
1681 TTCTTCAAG ACACGCGCA CTACAAGAC CGCCCGAG TGAAGTCTGA GGGCAGACC CTGGTGAACC GCATCGAGCT
1761 GAAGGCATC GACTTCAAG AGGACGGCA CATCTGGGG CACAAGCTGG AGTCAACTA CAACAGCCAC AACGTCTATA
1841 TCATGGCGA CAAGCAGAG AACGGCATCA AGGTGAACCT CAAGATCCG CACACATCG AGGACGGCAG CGTGCAGCTC
1921 GCGACCACT ACCAGAGAA CACCCCATC GGGACGGCC CCGTGTGCT GCGGACAA CACTACTGA GCACCCAGTC
2001 CGCCCTGAG AAAGACCCCA ACAGAGAAG CGATCACATG GTCTGTCTGG AGTTCGTGAC CGCCGCCGGG ATCACTCTCG
2081 GCATGGACGA GCTGTACAG TAAACGCTCT GGAACATCA ACCTGTGGAT TACAAATTT GTGAAGATT GACTGTATT
2161 CTTAACTATG TTGCTCTCTT TACGCTATGT GGATAGCTG CTTTATGTC CTTTATCAT GCTATTGCTT CCGTATGGC
2241 TTTCATTTTC TCCTCTCTT ATAAATCTG GTTGTGTCT GTTGTGAGG AGTTGTGCG CTTTGTGAG CAACGTGGCG
2321 TGTGTGAC TGTTTGTGT GACCAACCC CCATGGTGG GGGCATTTGCC ACCACTGTC AGTCTCTTC CCGGACTTTC
2401 GCTTTCGCC CTCTATTGC CACGCGGAA CTCATCGCG CCGCTCTGC CCGTGTGAG ACAGGGCTG GGTGTGTGG
2481 CACTGACAT TCCGTGTGT TGTGGGGAA GTCAGCTTC TTTCATGGC TGTGTGCTG TGTGTGCTG TGTGTGCTG
2561 GCGGACGTC CTTCTGTCT GTCCTTTCG CCGTCAATCC AGCGACCTT CTTTCCGCG GCCTGTGCT GGTCTGTGCG
2641 CTTCTTCCG GTCTTCGCT TCGCCCTCAG ACGATCGGA TCTCCCTTTG GCGCGCTCC CCGCTTGG

FIG. 16

Anti-human CD7 (TH69) PEBL (SEQ ID NO:2)

1 ATGGCTCTGC CTGTGACCGC ACTGCTGCTG CCCCTGGCTC TGCTGTGCA CGCCGCAAGA CCTGCCGCAT ACAAGGATAT
81 TCAGATGACT CAGACCACAA GCTCCCTGAG CGCTCCCTG GGAGACCGAG TGACAATCTC TTGCAGTGCA TCACAGGGAA
161 TTAGCAACTA CCTGAATTGG TATCAGCAGA AGCCAGATGG CACTGTGAAA CTGCTGATCT ACTATACCTC TAGTCTGCAC
241 AGTGGGGTCC CCTCAGGATT CAGCGGATCC GGCTCTGGGA CAGACTACAG CCTGACTATC TCCAACCTGG AGCCCGAAGA
321 TATTGCCACC TACTATTGCC TACTACTCTC AGCAGTACTC CAAGCTGCCT TATACCTTTG GCGGGGGAAC AAAGCTGGAG ATTAAAAGG
401 GAGGAGGAG AAGCGGAGGA GGAGGATCCG AGGAGATCCG CTGGAAGTGG ATCTGGAGGA GGAGGAATCT GGTGGAATCT
481 GGAGGAGGAC TGGTGAAGCC AGGAGGATCT CTGAAACTGA GTTGTGCCG TTCAGGCCCTG ACCTTCTCAA GCTACGCCAT
561 GAGCTGGGTG CGACAGACAC CTGAGAATGG GCTGGAATGG GTCCCTCTGG TCTCTCTCAG TACTATCCAG
641 ACTCCGTGAA AGCAGATTT ACTATCTCTC GGGATAACGC GTCGCTAGCA AAGAATATT CTGTACCTGC ACTGAGGAGC
721 GAGGACACCG CAATGTACTA TTGTGCCAGG GACGAAGTGC GCGGCTATCT GGTGTCTGG GGAGCTGGCA CTACCCGTAC
801 CGTCTCCAGC GAGCAGAAAC TGATTAGCGA AGAGGACCTG AAAGATGAAC TGTA

FIG. 17

Anti-human CD7 (3A1F) PEBL (SEQ ID NO:3)

1 ATGGCTCTGC CCGTCACCGC TCTGCTGCTG TCTCTGGCTC CAGTGTCAA CTGTCTGTA AGCCAGCGG CGCCGCAAGA CCCAGGTCC AGCTGCAGGA
81 GTCAGGGGCA GAGCTGGTGA AACCCGGAGC AGTGTCAA AGGCTCTGTA AGCCAGCGG CTATACTTTC ACCAGCTACT
161 GGATGCACTG GGTGAACACG AGGCCAGGAC AGGCTCTGTA AGGCTCTGTA AGGCTCTGTA AGGCTCTGTA AGGCTCTGTA AGGCTCTGTA
241 TACAACGAAA AGTTAAATC CAAGGCTACA CTGACTGTGG ACAAGAGCTC CTCTACCCGA TACATGCAGC TGAGTTCACT
321 GACATCTGAA GATAGTGCCG TGACTATTG CGCCAGAGGC GGGTCTACT ATGACCTGTA CTATTACGCA CTGGATTATT
401 GGGGCGAGG AACACAGTG ACTGTACGT CCGGAGGAGG AGGATCCGGC CTGGGGGAGG CTGGGGGAGG CCGGAGTGAC
481 ATCGAGCTGA CACAGTCTCC AGCCACTCTG AGCGTGACCC CTGGCGATTG TGTCAGTCTG TCATGTAGAG CTAGCCAGTC
561 CATCTCTAAC AATCTGCAT GGTACCAGCA GAAATCACAT GAAAGCCCTC GGCTGCTGAT TAAGAGTGCT TCACAGAGCA
641 TCTCCGGGAT TCCAAGCAGA TTCTCTGGCA GTGGGTCTGG AACCGACTTT ACACGTCTCA TTAACCTCTG TGAGACCGAA
721 GATTTCGGCA TGATTTTGTG CCAGCAGAGC AATTCTCTGG CTTACACATT CGAGGCGCGG ACTAAACTGG AGATTAAAG
801 GGAGCAGAAA CTGATTAGCG AAGAGGACCT GAAGGACGAA CTGTGA

FIG. 18

Anti-human CD7 (TH69) CAR (SEQ ID NO:4)

1	ATGGCTCTGC	CTGTGACTGC	CCCTGCTGCTG	CCCTGGGCC	TGCTGCTGCA	CGCTGCTAGA	CCCGCCGCAT	ACAAGGACAT
81	TCAGATGACT	CAGACTACAT	CCAGCCTGTC	AGTTTCCCTG	GGCGATCGAG	TGACTATCAG	CTGTTCAGCA	AGCCAGGGGA
161	TCAGCAATTA	CCTGAACCTGG	TACCAGCAGA	AGCCCGACGG	AACTGTCAAG	CTGCTGATCT	ACTATACTTC	CAGTCTGCAT
241	AGCGGGGTCC	CTAGCCGATT	CTCTGGGAGT	GGAAAGCGGCA	CCGACTATAG	CCTGACCAAT	TCCAACCTGG	AACCAGAGGA
321	CATTGCCACC	TATTACTGTC	AGCAGTATTC	AAAGCTGCCC	TATACCTTTG	GCGGAGGGAC	TAAGCTGGAG	ATCAAGCCGAG
401	GAGGGGGAGG	ATCAGGGGGA	GGGGGAGCG	GAGCGGGGG	GAGTGGCGGC	GGAGGGTCAG	AAGTCCAGCT	GGTCGAGAGT
481	GGGGCGGAC	TGGTGAACCC	TGGGGCTCT	CTGAACCTGA	GCTGTGCAGC	CAGTGGCCTG	ACATTCTCCT	CATATGCTAT
561	GTCTTGGGTG	CGGCAGACCC	CAGAAAAGAG	ACTGGAGTGG	GTGGCTTCAA	TCTCTTCCGG	GGGCTTCACT	TACTATCCTG
641	ACAGCGTGAA	AGCAGATTC	ACTATCTCCA	GGGATAACGC	ACGGAATATC	CTGTATCTGC	AGATGAGCTC	ACTGAGATCC
721	GAGGACACCG	CAATGTACTA	CTGCGCAAGA	GAGGAAGTGC	GGGGGTATCT	GGACGTGTGG	GGAGCAGGCA	CTACCGTCAC
801	CGTGTCTAGC	ACCACTACAC	CTGCACCAAG	GGTCCCAACA	CCGCTCCCA	CTATCGCTTC	CCAGCCACTG	TCCCTGAGGC
881	CCGAGGCCCTG	CAGGCCAGCA	GCTGGCGGAG	CCGTGCATAC	TAGGGGGCTG	GACTTCGCTT	GGCACATCTA	CATCTGGGCC
961	CCACTGGCAG	GGACATGCGG	AGTCTCTGCTG	CTGTCCCTGG	TCATCACACT	GTAATGCAAG	CGGGGGCGCA	AAAACTGCT
1041	GTATATCTTT	AAGCAGCCTT	TCAATGAGACC	AGTCAGACA	ACCCAGGAGG	AAGATGGGTG	CTCATGCCGG	TTTCCCGAGG
1121	AGGAGGAAGG	CGGCTGCGAG	CTGAGGGTGA	AGTTTTCCTG	CTCAGCAGAT	GCTCCTGCCT	ACCAGCAGGG	CCAGAACCAG
1201	CTGTATAATG	AGCTGAACCT	GGSCAGACGC	GAAGAGTATG	ATGTGCTGGA	CAAAAGGCCG	GGAAAGAGAC	CCGAAATGGG
1281	AGGGAAGCCA	AGGCGGAAAA	ACCCCCAGGA	GGSCCTGTAC	AATGAGCTGC	AGAAAGGACAA	AATGGCAGAG	GCTTACAGTG
1361	AGATTGGGAT	GAAAGGGAGAG	AGACGGAGGG	GGAAAGGGCA	CGATGGCCTG	TACCAGGGGC	TGAGCACAGC	AACCAAGAT
1441	ACTTATGACG	CACTGCACAT	GCAGGCACCTG	CCACCCAGAT	GA			

FIG. 19

Anti-human CD7 (3A1F) CAR (SEQ ID NO:5)

```
1 ATGGCTCTGC CCGTCACCGC TCTGCTGCTG CCTCTGGGTC TGCTGTGTCG AGCCTCTGCG CCACAGGTCC AGCTGCAGGA
81 GTCAGGAGCT GAGCTGGTGA AGCCAGGGG AGCGTCAA CTGTCTGCA AGCCTCTGG ATATACATTC ACTAGCTACT
161 GGATGCACTG GGTGAAACAG AGACCCGGAC AGGCCTGGA GTGGATCGGA AAGATTAAAC CTAGCAATGG CAGGACCAAC
241 TACAACGAAA AGTTAAATC CAAGGCAACC CTGACAGTGG ACAAGAGCTC CTCTACAGCC TACATGCAGC TGAGTTCACT
321 GACTTCAGAG GATAGCGCAG TGTAATAATG CGCCAGAGGC GGGGTCTACT ATGACCTGTA CTATTACGCC CTGGATTATT
401 GGGGCGAGG AACCACAGTG AACTGTCAGT CCGGAGGAGG AGGAAAGCGA TGTCAGTCTG TCATGTCTGG CAAGCCAGTC
481 ATCGAGCTGA CCGAGAGTCC TGCTACACTG AGCGTGACTC GAGCGGATTC GACTGCTGAT TAAGAGTGCC TCACAGAGCA
561 CATCTCTAAC AATCTGCACT GGTACCAGCA GAATCCCAT GAATCTCCAC AACTGCTGAT TTAAGTCACT GGAGACAGAA
641 TCTCCGGCAT TCCCTCCCGG TTCTCTGGCA GTGGGTGAGG AACTGACTTT ACCCTGAGTA CGGAGGCGGG ACCAACTGG AGATCAAGCG
721 GATTTCGGCA TGTATTTTTG CCAGCAGAGC AATTCTTGGC CCTACACTTT GTCAGCCACT GTCAGTGA GAAGAGCAT
801 GACTACCACA CAGCTCCAA CCGTGCACCA CCGTGCACCA CCGTGCACCA GACTTTTGGC TGGGATATCT ACATTTGGGC TCCTCTGGCA
881 GTAGGCCCTGC AGCTGGAGGA GCTGTGCACA GCTGTGCACA GCTGTGCACA TGTATTGCTG TGTACATTTT
961 GGAACCTGTG GCGTGTGCTG GCTGTCTCTG GCTGTCTCTG GCTGTCTCTG ACAGAGGCGG AAGAACTGC TGTACATTTT
1041 CAAGCAGCCC TTTATGAGGC CTGTGCAGAC TACCCAGGAG GAAGACGGCT GCAGCTGTG CTTCCTGAG GAAGAGGAAG
1121 GGGGATGTGA GCTGCGCGTC AAATTTCTC GAAATGTCAGG TATCAGCAGG TATCAGCAGG GCCAGAACCA GCTGTACAA
1201 ACAGCTGAATC TGGGCGCGAG AGAGGAATAT GAGGTGCTGG AATAAGAGCGG AGGAGGGGAC CCAGAAATGG GAGGAAACC
1281 ACAGCGGAAG AACCCCGAG AGGCCTGTA AGGCCTGTA CAGAAAGACA AATAAGAGCGG AGGAGGGG GAAATCGGA
1361 TGAAGGAGGA GAGAAAGGCG GCAAGGCGC ATGATGGCCT GTACCAGGGG CTGAGCACAG CAACCAAGA CACCTATGAC
1441 GCACTGCACA TGCAGGCACT GCCACACCGG TAAATGA
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FIG. 20

CMV promoter (SEQ ID NO:6)

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1 AAGCTTGGA GTCCGCGTT ACATAACTTA CGTAAATGG CCGCCTGGC TGACCGCCCA ACGACCCCG CCCATTGACG
81 TCAATAATGA CGTATGTTCC CATAGTAAC CCAATAGGA CTTTCCATTG ACGTCAATGG GTGGAGTATT TACGGTAAAC
161 TGCCCACTTG GCAGTACATC AAGTGTATCA TATGCCAAGT ACGCCCCCTA TTGACGTCAA TGACGGTAA TGCCCCGCCT
241 GGCATTATGC CCAGT
```

FIG. 21

EF1 α promoter (SEQ ID NO:7)

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1  GGTCCGGTG  CCGTCAGTG  GGCAGAGCG  ACATGCCCCA  CAGTCCCCGA  GAAGTTGGG  GGAGGGGTCG  GCAATTGAAC
81  CGGTGCCTAG  AGAAGGTGG  GCGGGTAAA  CTGGGAAAGT  GATGTCGTGT  ACTGGCTCCG  CCTTTTTCCT  GAGGTGGGG
161  GAGAACCGTA  TATAAGTGA  TTAGTCGCC  TTTCGCAAC  GGTTCGCCG  GGTTCGCCG  GGTTCGCCG  GGTTCGCCG
241  GTGTGTGGTT  CCGCGGGGC  TGGCTCTTT  ACGGTTATG  GCGTTGAAT  ACTTCCACT  GGTTCGAGTA  GGTTCGAGTA
321  GTGATTCTT  GATCCGAGC  TTCGGTTGG  AAGTGGTGG  GAGAGTTCA  GGCCTTGCC  TTAAGGAGCC  CCTTCGCCCT
401  GTGCTTGAGT  TGAGGCTTG  CCGGGCCTG  CCGGGCCTG  GCGGCGGCG  TGGTGGCAC  TTCGCGCTG  TCTCGCTGCT
481  TTCGATAAGT  CTCTAGCCAT  TTAATAATTT  TGATGACCTG  CTGCGACGCT  TTTTTCCTG  CAAGATAGTC  TTGTAATGTC
561  GGGCCAAAGT  CTGCACACTG  GTATTTCCGT  TTTTGGGGC  GCGGGCGGG  ACAGGCGGG  TGGTCCCGC  CGCACATGTT
641  CCGCGAGGCG  GGGCTGCGA  GCGCGGCCA  CGAGAAATCG  ACGGGGTAG  TCTCAAGCT  GCCGGCCTG  TCTGGTGCCT
721  GGCTCGCGC  CGCGTGAT  CGCGTGAT  CGCGTGAT  CGCGTGAT  CGCGTGAT  CGCGTGAT  CGCGTGAT
801  GCGCTTCCC  GCGCTTCCC  GCGCTTCCC  GCGCTTCCC  GCGCTTCCC  GCGCTTCCC  GCGCTTCCC  GCGCTTCCC
881  AAAGGAAAG  GCGCTTCCC  GCGCTTCCC  GCGCTTCCC  GCGCTTCCC  GCGCTTCCC  GCGCTTCCC  GCGCTTCCC
961  TAGTTCTCGA  GCTTTTGGG  TACGTGCTC  TACGTGCTC  TACGTGCTC  TACGTGCTC  TACGTGCTC  TACGTGCTC
1041  GTGGGAGACT  GAAAGTTAG  CAGCTTGGC  CAGCTTGGC  CAGCTTGGC  CAGCTTGGC  CAGCTTGGC  CAGCTTGGC
1121  TCATTCTCAA  GCCTCAGACA  GTGGTTCAA  GTGGTTCAA  GTGGTTCAA  GTGGTTCAA  GTGGTTCAA  GTGGTTCAA

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FIG. 22

EFS promoter (SEQ ID NO:8)

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1  ATTCTACCG  GTAGGGGAG  CGCTTTTCCC  AAGGCAGTCT  GGAGCATGCG  CTTTAGCAG  CCCGCTGGG  ACTTGGCGCT
81  ACACAAGTG  CCTCTGGCT  CGCACACATT  CCACATCCAC  CCGTAGGCG  CAACCGGCT  CGTTCTTTG  TGGCCCCCTC
161  GCGCACCTT  CTACTCCTC  CACTCCTCC  CACTCCTCC  CACTCCTCC  CACTCCTCC  CACTCCTCC  CACTCCTCC
241  AGTAGCAGT  CTCACAGTC  TCGTGCAGT  GGTGAGCAAT  GGTGAGCAAT  GGTGAGCAAT  GGTGAGCAAT  GGTGAGCAAT
321  AATAGCAGT  TTGCTCCTC  GCTTCTCTG  GGTGAGCAAT  GGTGAGCAAT  GGTGAGCAAT  GGTGAGCAAT  GGTGAGCAAT
401  AGGGCGGGG  CCGGCGGGG  AAGTCTCTC  GGTGAGCAAT  GGTGAGCAAT  GGTGAGCAAT  GGTGAGCAAT  GGTGAGCAAT
481  CTCTCTTCC  TCATCTCCG  GCCTTTCGA  GCCTTTCGA  GCCTTTCGA  GCCTTTCGA  GCCTTTCGA  GCCTTTCGA

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FIG. 23

MSCV promoter (SEQ ID NO:9)

1 GGAATGAAAG ACCCCACCTG TAGGTTTGGC AAGCTAGCTT AAGTAACGCC ATTTTGCAAG GCATGGAAA TACATAACTG
81 AGAATAGAGA AGTTCAGATC AAGGTTAGGA ACAGAGAGAC AGCAGAAATAT GGGCCAAACA GGATATCTGT GGTAAAGCAGT
161 TCCTGCCCCG GCTCAGGGCC AAGAACAGAT GGTCCCCAGA TGGGGTCCCG CCTCAGCAG TTTCTAGAGA ACCATCAGAT
241 GTTTCAGGG TGCCCCAAGG ACCTGAAATG ACCTGTGCC TTATTTGAAC TAACCAATCA GTTCGCTTCT CGCTTCTGTT
321 CGCGGGCTTC TGCTCCCCGA GCTCAATAAA AGAGCCCCACA ACCCTCACT CGGGCGGCCA GTCC

FIG. 24

PGK promoter (SEQ ID NO:10)

1 ATTCTACCG GTAGGGGAGG CGCTTTTCCC AAGGCAGTCT GGAGCATGCG CTTTAGCAGC CCCGCTGGG ACTTGGCGCT
81 ACACAAGTG CCTTGGCCT CGCACACATT CCACATCCAC CGGTAGGCGC CAACCGGCTC CGTTCTTTGG TGGCCCCCTTC
161 GCGCACCTT CTACTCCTCC CTTAGTCAGG AAGTTCCCGC CGCCCCGCA GCTCGCGTCG TGCAGGACGT GACAAATGGA
241 AGTAGCAGT CTCACTAGTC TCGTGAGAT GGACAGCAC GGTGAGCAAT GGAAGCGGGT AGGCTTTGG GGCAGCGGCC
321 AATAGCAGT TTGCTCCTTC GCTTCTGGG CTCAGAGGCT GGAAGGGGT GGTCCGGG GCGGGCTCAG GGGCGGGCTC
401 AGGGCGGGG CGGGCGCCG AAGTCTCTCC GGAGGCCCGG CATTCTGCAC GCTTCAAAAG CGACGCTCTG CCGCGCTGTT
481 CTCCTCTTC TCATCTCCG GCCTTTCGA

FIG. 25

Anti-human CD7 (TH69) PEBL-IRES-Anti-human CD7 (TH69) CAR (SEQ ID NO:11)

1 ATGGCTCTGC CTGTGACCGC ACTGCTGCTG CCCCTGGGCTC TGCTGTGCA CGCCGCAAGA CCTGCCGCAT ACAAGGATAT TCAGATGACT
 91 CAGACCACAA GCTCCCTGAG CGCCTCCCTG GGAGACCGAG TGCAATCTC TTGCAATGCA TCACAGGAA TTAGCAACTA CCTGAATTGG
 181 TATCAGCAGA AGCAGATGG CACTGTGAAA CTGTGTGATCT ACTATACCTC TAGTGTGCAC AGTGGGGTCC CCTCAGATT CAGCGGATCC
 271 GGCTCTGGGA CAGACTACAG CCTGACTATC TCCAACTCTG AGCCGGAAGA TATTGCCACC TACTATTGCC AGCAGTACTC CAAGCTGCCT
 361 TATACCTTTG GCGGGGGAAC AAAGCTGGAG ATTAAAAGG GAGGAGGGA AAGGATCCG GGAGCGGGG ATTCTGAGGA
 451 GGAGGAAGTG AGGTGCAGCT GGTGCAATCT GGAGGAGGAC TGCTGAAGCC AGGAGATCT CTGAAACTGA GTTGTGCCG TTTCAGGCTG
 541 ACCTTCTCAA GCTACGCCAT GAGCTGGGTG CGACAGACAC CTGAGAAGCG GCTGGAATGG GTCGCTAGCA TCTCTCTGG CGGTTTCA
 631 TACTATCCAG ACTCCGTGAA AGGCAGATT ACTATCTCTC GGGATAACGC AAGAAATATT CTGTACCTGC AGATGATTC ACTGAGAGC
 721 GAGGACACCG CAATGTACTA TTGTGCCAGG GACGAAGTGC GCGGTATCT GGTGTCTGG GGAGCTGGCA CTACCTCAC CGTCTCCAGC
 811 GAGCAGAAAC TGATTAGCGA AGAGACCTG AAGATGAAC TGTAAAGGGA TCAATCCGC CCCCCCCCTA ACCTTACTGG CCGAAGCCGC
 901 TTGGAATAAG GCGGTGTGC GTTGTCTAT ATGTTATTTT CCACCATATT GCCGTCTTTT GGCAATGTGA GGGCCCGAA ACCTGGCCCT
 991 GTCTCTTTGA CGAGCATTC TAGGGTCTT TCCCTCTCG CCAAGGAAT GCAAGTCTG TTGAATGTG TGAAGGAAG AGTTCCTCTG
 1081 GAAGCTTCTT GAAGACAAAC AACCTCTGTA GCGACCTTTT GCAGCAGCG GAACCCCCA CTTGGCTCTG GGTGCCCTCTG CCGCCAAAAG
 1171 CCACGTGTAT AAGATACACC TGCAAAAGCG GCACAACCC AGTGCCACGT TGTGATTTGG ATAGTTGTGG AAAGATCAA ATGGCTCTCC
 1261 TCAAGCGTAT TCAACAAGG GCTGAAGGAT GCCCAATGG TATGGATCT TATGGGGC CTCGGTGCAC ATGCTTTACA
 1351 TGTGTTTGTG CGAGGTTAA AAAACGTCTA GGCCTCCCGA ACCAGGGGA CGTGTGTTTC CTTTGA AAAA CACGATAATA CCATGGCTCT
 1441 GCCTGTGACT GCCCTGCTG TGCCCTTGGC CTTGCTGCTG CACGTGCTA GACCCGCCG ATACAAGGAC ATTCAAGTA CTCAGACTAC
 1531 ATCCAGCCTG TCAGCTTCC TGGGCGATCG AGTCACTATC AGCTGCTCAG CAAGCCAGG GATCAGCAAT TACCTGAACT GGTACCAGCA
 1621 GAAGCCCGAC GGAATGTCA AGCTGCTGAT CTACTATACT TCCAGTCTG ATAGCGGGT CCCTAGCCGA TTCTCTGGA GTGGAAGCGG
 1711 CACCGACTAT AGCTGACCA TTTCCAACCT GGAACAGAG GACATTGCCA CCTATTACTG TCAGCAGTAT TCMAAGCTGC CCTATACCTT
 1801 TGGCGGAGG ACTAAGCTG AGATCAAGC AGGAGGGGA GGATCAGGG GAGGCGGG GGGAGTGGC GCGGAGGGTC
 1891 AGAAGTCCAG CTGCTCGAGA GTGGGGGGG ACTGCTGAAA CCTGGGGGT CTCTGAAACT GAGCTGTGCA GCCAGTGGCC TGACATCTCTC
 1981 CTATATGCT ATGCTTTGG TGCGGCAGAC CCCGAAAG AGACTGGAGT GGTGGCTTC AATCTCTCC GGGGGCTTCA CTTACTATCC
 2071 TGACAGCGTG AAGGCAGAT TCACTATCTC CAGGATAAC GCAGGAATA TCCTGTATCT GCAGTGAAC TCCTGAGAT CCGAGGACAC
 2161 CGCAATGTAC TACTGCGCA GAGACGAAGT GCGGGGGTAT CTGGACGTGT GGGGAGCAGG CACTACCGTC ACCGTGTCTA GCACCACTAC
 2251 ACCTGCACA AGGCTCCCA CACCGCTCC CACTATGCT TCCAGCCCA TGTCCTGAG GCCGAGGCC TGCAGGCCAG CAGCTGGCGG
 2341 AGCGGTGAT ACTAGGGGG TGGACTTCC TTGGACATC TACATCTGG CCCACTGGC AGGACATGC GGAGTCTGC TGCTGTCCCT
 2431 GTCATCACA CTGACTGCA AGCGGGGG CAAAAACG CTGTATATCT TTAAGCAGC TTTCATGAGA CCAGTCAGA CAACCCAGGA
 2521 GGAAGATGGG TGCTCATGCC GTTTCCCGA GGAGAGGAA GCGGCTGCG AGCTGAGGT GAACTTTCC CGCTCAGCAG ATGCTCTGTC
 2611 CTACCAGAG GGCAGAAC AGCTGTATAA TGAGCTGAAC CTGGCAGAG CGGAAGATA TGATGTGCTG GACAAAAGG AGCTTTACAG
 2701 CCGGAAATG GGAGGGAAGC CAAGGCGGAA AAACCCCAAG GAGGCTCTGT ACAATGAGCT GCAGAGGAC AAAATGGCAG AGGTTTACAG
 2791 TGAGATTGG ATGAAGGGAG AGAGACGGAG GGGAAAAGG CACATGGCC TGTACCAGG GCTGAGCACA GCAACCAAG ATACTATGA
 2881 CGCACTGCAC ATGACGGCAC TGCCACCCAG ATGACGCCA GGGGATTTCA CCACTCAAAG GCCAGACCTG CAGACGCCA GATTATGAGA
 2971 CACA

FIG. 26

Anti-human CD7 (TH69) CAR-IRES-Anti-human CD7 (TH69) PEBL (SEQ ID NO:12)

1 ATGGCTCTGC CTGTGACTGC CCTGCTGCTG CCCCTGGCCC TGCTGCTGCA CGTGCTGTAGA CCCCGCCGCA ACAAGGACAT TCAGATGACT
91 CAGACTACAT CCAGCCTGTC AGCTTCCCTG GGCATCGAG TGACTATCAG CTGTTCAGCA AGCCAGGGA TCAGCAATTA CTTGAAGTGG
181 TACCAGAGA AGCCGACGG AACTGTCAAG CTGTGTGATCT ACTATATCTT CAGTCTGCAT AGCGGGTCC CTAGCCGATT CTCTGGGAGT
271 GGAAGCGGCA CCGACTATAG CCTGACCAAT TCCAACTCTG AACCAAGGA CATTGCCACC TATTACTGTC AGCAGTATTC AAAGCTGCC
361 TATACCTTTG GCGAGGGGAC TAACTGGAG ATCAAGCGAG GAGGGGGA CATTGGGGA GAGCGGGG GAGTGGCGG
451 GGAGGTTGAG AAGTCCAGCT GTTCGAGAGT GGGGCGGAG TGCTGAAACC TGGGGCTCT CTGAAACTGA GCTGTGCAGC CAGTGGCCTG
541 ACATTTCTCT CATATGCTAT GTCTTGGTG CGGACGACC CAGAAAAGAG ACTGGATGT GTGGTTCAA TCTTTCCGG GGGTTTCACT
631 TACTATCTCT ACAGCGTGA AGGAGATTC ACTATCTCCA GGGATAACG ACGGATATC CTGTATCTGC AGATGAGCTC ACTGAGATCC
721 GAGGACACG CAATGTACTA CTGGCAAGA GACGAAGTGC GGGGTATCTT GGACGTGTG GAGCAGGCA CTACCGTCAC CGTGTCTAGC
811 ACCACTACG CTGCACCAAG GCCTCCACA CCCGTCCCA CTATCGCTTC CCAGCACTG TCCCTGAGC CCGAGGCTG CAGGCCAGCA
901 GTTGGCGGAG CCTGTCATAC TAGGGGCTG GACTTGGCTT GCGACATCTA CATCTGGCC CCCTGGCAG GGACATGCG AGTCCTGCTG
991 CTGTCCCTGG TCATCACACT GTACTGCAAG CGGGGCGCA AAAAAGTCTT GTATATCTTT AAGCAGCCTT TCATGAGACC AGTGCAGACA
1081 ACCCAGGAG AAGATGGTG CTCATGCCG TTTCCCGAG AGGAGGAAG CGGCTGCGAG CTGAGGGTGA AGTTTCCCG CTCAGCAGAT
1171 GCTCCTGCT ACCAGCAGG CCAAGAACAG CTGTATAATG AGCTGAACCT GGGCAGACGC GAAGATATG ATGTGCTGA CAAAAGCGG
1261 GGAAGAGACC CCGAAATGG AGGAAGCCA AGCGGAAA ACCCCAGGA GGGCTGTAC AATGAGCTGC AGAAGGACAA AATGGCAGAT
1351 GCTTACAGT AGATGGGAT GAAGGGAGAG AGACGGAGG GAAAGGGCA CGATGGCCTG TACCAGGGG TGAGCACAGC AACCAAAGAT
1441 ACTATGAG CACTGCACAT GCAGGCACTG CCACCCAGT GACAGCCAG GGAATTCACC ACTCAAAGC CAGACCTGCA GACGCCAGCA
1531 TTATGAGACA CACGGATCA ATTCCGCCCTT GCTTTTGGC AATGTGAGG CCCGAAACC TTCTTGACGA GCATTCCTAG GGGTCTTTCC
1621 TTATTTTCCA CCTATTGCC AGTCTGTTG AATGTGTTG AATGTGTTG AATGTGTTG AATGTGTTG AATGTGTTG AATGTGTTG AATGTGTTG
1711 CCTCTCGCA AAGGAATGCA AGTCTGTTG AATGTGTTG AATGTGTTG AATGTGTTG AATGTGTTG AATGTGTTG AATGTGTTG AATGTGTTG
1801 ACCCTTTGCA GGCAGCGGA CCCCCACCT GGCAGCAGT GGCAGCAGT GGCAGCAGT GGCAGCAGT GGCAGCAGT GGCAGCAGT GGCAGCAGT
1891 CAACCCAGT GCCAGTTGT GAGTTGGATA GTTGTGGAAA GATCAAAATG GCTCTCTCA AGCCTATCA ACAAGGGCT GAAGGATGCC
1981 CAGAAGGTAC CCATTTGAT GGGATCTGAT CTGGGCTCTG GGTGCACATG CTTTACATGT GTTTAGTCA GGTAAAAA ACCTCTAGGC
2071 CCCCCGAACC ACGGGGACGT GGTCTCTCTT TGAATAACAT GATATACCA TGGCTCTGCC TGTGACCGCA CTGCTGCTGC CCCTGGCTCT
2161 GCTGCTGAC GCGCAAGAC CTGCGGCATA CAAGATATT CAGATGACTC AGACCACAA CTCCCTGAGC GCCTCCCTGG GAGACCGAGT
2251 GACATCTCT TGCACTGCAT CACAGGGAAT TAGCAACTAC CTGAATGCT ATCAGCAGAA GCCAGATGC ACTGTGAAAC TGCTGATCTA
2341 CTATACCTCT AGTCTGCACA GTGGGTTCC CTACGATTC AGCGATCCG GCTCTGGAC AGACTACAG CTGACTATCT CCAACCTGGA
2431 GCGCGAAGT ATTGCCACCT ACTATTGCA GCACTACTC AAGTGCCTT ATACCTTGG CCGGGAACA AAGCTGAGA TTAAGGGG
2521 AGGAGGAGA AGCGGAGGAG GAGATCCGG AGCGGGGGA TCTGGAGGAG GAGGAAGTGA GGTGAGCTG GTCGAATCTG GAGGAGACT
2611 GTGAAGCA GGAGGATCTC TGAACCTGAG TTGTCCGCT TCTGAGCTG CTTCTCAAG CTACGCCATG AGCTGGTGC GACAGACACC
2701 TGAGAAAGCG CTGGAATGG TCGTAGCAT CTCTCTGG GGTTCACAT ACTATCCAG CTCCTGAAA GGCAGATTTA CTATCTCTG
2791 GGATAACGCA AGAATAATTC TGTACCTGCA GATGAGTTCA CTGAGGAGC AGGACACCG AATGTACTAT TGTGCCAGG ACGAAGTGG
2881 CGGCTATCTG GATGTCTGG GAGCTGGC TACCGTACC GTCTCCAGC AGCAAACT GATTAGCGAA GAGGACCTGA AAGATGAAC
2971 GTAA

FIG. 27

Anti-human CD7 (TH69) CAR-P2A-Anti-human CD7 (TH69) PEBL (SEQ ID NO:13)

1	ATGGCTCTGC	CTGTGACTGC	CCTGCTGCTG	CCCTGGGCC	TGCTGCTGCA	CGTGCTAGTA	CCCGCGGCAT	ACAAGGACAT	TCAGATGACT
91	CAGACTACAT	CCAGCCTGTC	AGCTTCCCTG	GGCGATCGAG	TGACTATCAG	CTGTTCAGCA	AGCCAGGGGA	TCAGCAATTA	CCTGAAGTGG
181	TACCAGCAGA	AGCCCGACGG	AATGTGTCAAG	CTGTGTGATCT	ACTATACTTC	CAGTCTGCAT	AGCGGGTCC	CTAGCCGATT	CTCTGGGAGT
271	GGAAAGCGCA	CCGACTATAG	CCTGACCAAT	TCCAACTCTG	AACCCAGAGGA	CATTGCCACC	TATTACTGTC	AGCAGTATTC	AAAGCTGCCC
361	TATACCTTTG	GCGAGAGGAC	TAACTTGGAG	ATCAAGCGAG	GAGGGGAGG	CATAGGGGGA	GGGGCGGGG	GAGGCGGGG	GAGTGGCGGC
451	GGAGGGTCAG	AAGTCCAGCT	GATCGAGAGT	GGGCGCGGAC	TGTTGAAACC	TGGGGGCTCT	CTGAAACTGA	GCTGTGCAGC	CAGTGGCCTG
541	ACATTCCTCT	CAATGCTAT	GTCTTGGGTG	CGGACAGCC	CAGAAAAGAG	ACTGGAGTGG	GTGGTTCAA	TCTCTTCCGG	GGGCTTCACT
631	TACTATCCTG	ACAGCGTGAA	AGGCAGATTC	ACTATCTCCA	GGGATAACGC	ACGGATATTC	CTGTATCTGC	AGATGAGCTC	ACTGAGATCC
721	GAGGACACCG	CAATGTACTA	CTGGCCAAGA	GACGAAGTGC	GGGGTATCT	GGACGTGTGG	GGAGCAGGCA	CTACCGTCAC	CGTGTCTAGC
811	ACCACTACAC	CTGCACCAAG	GCCTCCCAAC	CCCGTCCCA	CTATCGCTTC	CCAGCCACTG	TCCCTGAGGC	CCGAGGCTG	CAGGCCAGCA
901	GCTGGCGGAG	CCGTGCATAC	TAGGGGGCTG	GACTTCGCTT	GCGACATCTA	CATCTGGGCC	CCACTGGCAG	GGACATGCGG	AGTCCTGCTG
991	CTGTCCCTGG	TCATCACACT	GTACTGCAAG	CGGGGGCGCA	AAAAACTGCT	GTATATCTTT	AAGCAGCCTT	TCATGAGACC	AGTGCAGACA
1081	ACCCAGGAGG	AAGATGGGTG	CTCATGCCCG	TTTCCCGAGG	AGGAGGAAGG	CGGCTGCGAG	CTGAGGGTGA	AGTTTCCCG	CTCAGCAGAT
1171	GCTCCTGCCT	ACCAGCAGGG	CCAGAACCAG	CTGTATAATG	AGCTGAACCT	GGGCAAGACG	GAAGATATG	ATGTGCTGGA	CAAAAGCGGG
1261	GGAAAGAGCC	CCGAAATGGG	AGGGAAGCCA	AGGCGGAAA	ACCCCAAGGA	GGGCTGTAC	AATGAGCTGC	AGAAAGACAA	AATGGCAGAG
1351	GCTTACAGTG	AGATTTGGGAT	GAAGGGAGAG	AGACGGAGGG	GAAAAGGGCA	CGATGGCCTG	TACCAAGGGC	TGAGCACAGC	AACCAAAGAT
1441	ACTTATGAGC	CACGTGCACAT	GCAGGCACATG	CCACCCAGAG	GCAGCGCGCG	CACAACTTC	TCTCTGCTAA	AGCAAGCAGG	TGATGTGAA
1531	GAAAACCCCG	GGCCTATGCG	TCTGCTGTG	ACCGCACTGC	TGCTGCCCT	GGCTCTGCTG	CTGCAGCGCG	CAAGACCTGC	CGCATACAAG
1621	GATATTCTGA	TGACTCAGAC	CACAAGCTCC	CTAGCGCCT	CCCTGGGAGA	CCGAGTGACA	ATCTCTGCA	GTGCATCACA	GGGAATTAGC
1711	AACTACCTGA	ATTGGTATCA	GCAGAGCCA	GATGGCACTG	TGAACCTGCT	GATCTACTAT	ACCTCTAGTC	TGCACAGTGG	GGTCCCCTCA
1801	CGATTCAGCG	GATCCGGCTC	TGGGACAGAC	TACAGCCTGA	CTATCTCAA	CCTGAGGCC	GAAGATATTG	CCACCTACTA	TTGCCAGCAG
1891	TACTCCAAAGC	TGCCTTATAC	CTTTGGCGGG	GGACAAAGC	TGGAGATTAA	AAGGGAGGA	GGAGNAAGCG	GAGGAGGAGG	ATCCGGAGGC
1981	GGGGATCTG	GAGGAGGAGG	AAGTGAAGTG	CAGCTGGTGC	AATCTGAGG	AGGATGGTG	AAGCCAGGAG	GATCTCTGAA	ACTGAGTTGT
2071	GCCGCTTCAAG	GCTGACCTT	CTCAAGCTAC	GCCATGAGCT	GGTGGGACA	GACACTGAG	AAGCGGCTGG	AATGGGTCCG	TAGCATCTCC
2161	TCTGGCGGGT	TCACATACTA	TCCAGACTCC	GTGAAAGGCA	GATTTACTAT	CTCTCGGGAT	AACGCNAGAA	ATATTCTGTA	CCTGCAGATG
2251	AGTTCACTGA	GGAGCGAGGA	CACCGCAATG	TACTATTGTG	CCAGGACGA	AGTGGCGGC	TATCTGGATG	TCTGGGAGC	TGGCACTACC
2341	GTCAACCTCT	CCAGCGAGCA	GAACCTGATT	AGCGAAGAGG	ACCTGAAAGA	TGAACTGTAA			

FIG. 28A

MSCV promoter - Anti-human CD7 (TH69) CAR-p2A-Anti-human CD7 (TH69) PEBL (SEQ ID NO:14)

1 GGAATGAAAG ACCCCACCTG TAGGTTTGGC AAGTAGCTT AAGTAACGCC ATTTTGCAAG GCATGGAAAA TACATAACTG
81 AGAATAGAGA AGTTTCAAGATC AAGGTTTAGGA ACAGAGAGAC AGCAGAAATAT GGGCCAAACA GGATATCTGT GGTAAAGCAGT
161 TCCTGCCCCG GCTCAGGGCC AAGAACAGAT GGTCCCCAGA TGCGGTCCCG CCTCAGACAG TTCTTAGAGA ACCATCAGAT
241 GTTCCAGGG TGCCCCAAGG ACCTGAAATG ACCTGTGCG TATTTGAAC TAACCAATCA GTTCGCTTCT CGTTCTCTTT
321 CGCGCGCTTC TGCTCCCCGA GCTCAATAAA AGAGCCACCA ACCCTCACT CGGCGGCCA GTCCGAATTC GGTTCCACC
401 ATGGCTCTGC CTGTGACTGC CCTGTGCTG CCTCTGGCCC TGCTGTGCTGA CGCTGTGCTGA CCGCGCCGAT ACAAGGACAT
481 TCAGATGACT CAGACTACAT CCAGCCTGTC AGCTTCCCTG GCGATCTGAG TGAATATCAG CTGTTCAGCA AGCCAGGGGA
561 TCAGCAATTA CCTGAACCTGG TACCAGCAGA AGCCCGACGG AACTGTCAAG CTGCTGATCT ACTATACTTC CAGTCTGCAT
641 AGCGGGGTCC CTAGCCGATT CTCTGGGAGT GGAAGCGGCA CCGACTATAG CCTGACCAAT TCCAACCTGG AACCAAGGGA
721 CATTGCCACC TATTACTGTC AGCAGTATTC AAAGCTGCC TATACCTTTG GCGGAGGGAC TAACTGGAG ATCAAGCCGAG
801 GAGGGGGAGG ATCAGGGGGA GGGGGGAGCG GAGCGGGGGG GAGTGGCGG GAGGCGTCAG AAGTCCAGCT GGTGAGAGT
881 GGGGGCGGAC TGCTGAAACC TGCGGGCTCT CTGAAACTGA GCTGTGCAGC CAGTGGCCTG ACATCTCCT CATATGCTAT
961 GTCTTGGGTG CGGCAGACCC CAGAAAAGAG ACTGGAGTGG GTGGCTTCAA TCTCTTCCGG GGGCTTCACT TACTATCCTG
1041 ACAGCGTGAA AGCAGATTC ACTATCTCCA GGGATAACGC ACAGATATC CTGTATCTGC AGATGAGCTC ACTGAGATCC
1121 GAGGACACCG CAATGTACTA CTGCGCAAGA GACGAAGTGC GGGGGTATCT GGACGTGTGG GGAGCAGGCA CTACCGTCA
1201 CBTGTCTAGC ACCACTACAC CTGCACCAAG GCTCCCAAC CCGCTCCCA CTATCGCTTC CCAGCCACTG TCCCTGAGGC
1281 CCGAGGCTG CAGGCCAGCA GCTGGCGGAG CCGTGCTATC TAGGGGCTG GACTTCGCTT GCGACATCTA CATCTGGGC
1361 CCACTGGCAG GGACATGCGG AGTCTGCTG CTGTCCCTGG TCATCACACT GTACTGCAAG CGGGGGCGCA AAAAAGTCT
1441 GTATATCTTT AAGCAGCCTT TCATGAGACC AGTCAGACA ACCAGGAGG AAGATGGGTG CTCATGCCGG TTTCCCGAGG
1521 AGGAGGAAGG CGGCTGCGAG CTGAGGGTGA AFTTTTCCCG CTCAGCAGAT GCTCCTGCCT ACCAGCAGGG CCAGAACCAG
1601 CTGTATAATG AGCTGAACCT GGGCAGACGC GAAGAGTATG ATGTGCTGGA CAAAAGGCGG GGAAGAGACC CCGAAATGGG
1681 AGGGAAGCCA AGCGGAAAA ACCCCAGGA GSGCTGTAC AATGAGCTGC AGAAGGACAA AATGGCAGAG GCTTACAGTG
1761 AGATTGGGAT GAAGGGAGAG AGACGGAGGG GAAAAGGGCA CGATGGCCTG TACCAGGGGC TGAGCACAGC AACCAAGAT
1841 ACTTATGACG CACTGCACAT GCAGGCACAT CCACCCAGAT GAGGCAGCGG CGCCACAAAC TTCTCTCTGC TAAAGCAAGC
1921 AGGTGATGTT GAAGAAAAAC CCGGCCCTAT GGCTCTGCCT GTGACCGCAC TGCTGTGCC CCTGGCTCTG CTGCTGCACG
2001 CCGCAAGACC TGCCGCATAC AAGGATATTC AAGTACTCA GACCACAAG TCCCTGAGCG CCTCCCTGGG AGACCGAGTG
2081 ACAATCTCTT GCAGTGCATC ACAGGGAATT AGCAACTACC TGAATTGGTA TCAGCAGAG CCAGATGGCA CTGTGAAACT
2161 GGTGATCTAC TATACCTCTA GTCTGCACAG TGGGGTCCCG TCAGATTCA GCGGATCCGG CTCTGGGACA GACTACAGCC
2241 TGAATATCTC CAACCTGGAG CCGAAGATA TTGCCACCTA CTATTGCCAG CAGTACTCCA AGCTGCCTTA TACCTTTGGC
2321 GGGGAACAA AGCTGGAGAT TAAAAGGGGA GAGGAGGAA GCGGAGGAG AGGATCCGGA GCGGGGGAT CTGGAGGAG
2401 AGGAAGTGAG GTGAGCTGG TCGAATCTGG AGGAGGACTG GTGAAGCCAG GAGGATCTCT GAAACTGAGT TGTGCCGCTT
2481 CAGGCTGAC CTCTCAAGC TACGCCATGA GCTGGGTGG ACAGACACCT GAGAAAGCGG TGAATGGGT CGCTAGCATC

FIG. 28B
SEQ ID NO:14 continued

2561 TCCTCTGGCG GGTTCACATA CTATCCAGAC TCCGTGAAAG GCAGATTAC TATCTCTCGG GATAACGCA GAAATATTCT
 2641 GTACCTGCAG ATGAGTTTAC TGAGGAGCGA GGACACCGCA ATGTACTATT GTGCCAGGGA CGAAGTGCGG GGCTATCTGG
 2721 ATGTCTGGG AGCTGGCACT ACGTCAACG TCTCCAGCG TCTCCAGCGA GCAGAACTG ATTAGCGAAG AGGACCTGAA AGATGAACCTG
 2801 TAA

FIG. 29A

EF1a promoter -Anti-human CD7 (TH69) CAR-P2A-Anti-human CD7 (TH69) PEBL (SEQ ID NO:15)

1 GGCTCCGGTG CCGTCAAGT GGCAGAGCGC ACATGCCCA CAGTCCCCGA GAAATTGGGG GGAGGGGTG GCAATTGAAC
 81 CGGTGCCCTAG AGAAGGTGGC GCGGGGTAAA CTGGGAAAGT GATGTCTGT ACTGGCTCCG CCTTTTCCC GAGGGTGGGG
 161 GAGAACCGTA TATAAGTGCA GTAGTCGCCG TGAACGTTCT TTTCGCAAC GGGTTTGCCG CCAGAACACA GGTAAGTGCC
 241 GTGTGTGGTT CCGCGGGGC TGGCTCTTTT ACGGTTATG GCCTTGCGT GCCTTGAATT ACTTCCACCT GGCTGCAGTA
 321 CGTGATTCTT GATCCCGAGC TTCGGGTTGG AAGTGGTGG GAGAGTTTCA GGCCTTGCG TTAAGGAGCC COTTCGCCTC
 401 GTGCTTGAGT TGAGGCCCTGG CTTGGGGCGCT GGGGCCGCCG CGTGGCAATC TGGTGGCACC TTCGGGCCCTG TCTCGCTGCT
 481 TTGATAAGT CTCTAGCCAT TTAATAATTT TGATGACCTG CTGCGACGCT TTTTCTTGG CAAGATAGTC TTGTAATGCT
 561 GGGCAAGAT CTGCACACTG GTATTTCGGT TTTGGGGCC GCGGGCGCG TCGTCCCCG CGCACATGTT
 641 CGCGAGGCG GGGCTTCCA GCGGGGCCAC CGAATTCGG ACGGGGTAG TCTCAAGCTG GCGGGCCTGC TGTGGTGCCT
 721 GGCTCGCGC CGCGGTGTAT CGCCCGGCC TGGCGGCCA GGTGGCCCG GTCCGCACCA GTTGGCTGAG CGGAAAGATG
 801 GCGCTTCCC GCGCTGCTG CAGGAGCTC AAAATGGAG ACGCGCGCT CCGGAGAGCG GCGGGGTGAG TCACCCACAC
 881 AAAGGAAAAG GCGTTTCCG TCTCAGCCG TCGCTCATG TCACTCCAC GAGTACCGG GCGCTCCAG GCACCTCGAT
 961 TAGTCTCGA GCTTTTGGAG TAGCTGCTCT TTAGTTGGG GGGAGGGTT TTATGCGATG GAGTTTCCCC AACTGAGTG
 1041 GGTGGAGACT GAAGTTAGG CAGCTTGGCA CTGATGTAA TTCTCTTGG AATTGCCCT TTTGAGTTT GGATCTTGGT
 1121 TCAATCTCAA GCCTCAGACA GTGGTTCAA GTTTTCTT TCCATTTTCT TCGTGTGAG AATTGGGCTT CCACCATGGC
 1201 TCTGCCCTGT ACTGCCCTGC TCGTGCCCTT GCGCCCTGCTG CTGACGCTG CTAGACCCGC CGCATACAAG GACATTCAGA
 1281 TGAATCAGAC TACATCCAGC CTGTGAGCTT CCCTGGGCGA TCGAGTGACT ATCAGCTGTT CAGCAAGCCA GGGGATCAGC
 1361 AATTACCTGA ACTGGTACCA GCAGAAGCCC GACGGAAGCTG TCAAGCTGCT GATCTACTAT ACTTCCAGTC TGCATAGCGG
 1441 GGTCCCTTAGC CGATTCTCTG GAGTGGGAG CGCACCCGAC TATAGCTTGA CCATTTCGA CTTGGAACCA GAGGACATTG
 1521 CCACCTATTA CTGTACAGC TATTCAAGC TGGCTTATAC TGTGGCGGA GGCAGATCAA GCGAGGAGGG
 1601 GGAGGATCAG GGGGAGGGG GACGGGAGG CCGGGGAGT GCGGCGAGT GGCAGAAATC CAGCTGGTGC AGAGTGGGG
 1681 CGGACTGGTG AAACCTGGG GCTCTCTGAA ACTGAGCTGT GCAGCGAGT GCTCTCATAT GCTATGTCTT
 1761 GGGTGCAGCA GACCCAGAA AAGAGACTGG AGTGGGTGGC TTCAATCTCT TCGGGGGCT TCACTTACTA TCCTGACAGC

FIG. 29B
SEQ ID NO:15 continued

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1841 GTGAAAAGGCA GATTCACTAT CTCCAGGGAT AAGCAGCGGA ATATCTCTGTA TGTGCAGATG AGTCACTGTA GATCCGAGGA
1921 CACCGCAATG TACTACTGCG CAAGAGACGA AGTGGGGGG TATCTGGAGT TGTGGGGAGC AGGCACTACC GTACCCGTGT
2001 CTAGCACCACTACACTGCA CCAAGGCCTC CCACACCCGC TCCCACATC GCTTCCCAGC CACTGTCCCT GAGGCCCCGAG
2081 GCCTGCAGGC CAGCAGCTGG CCGAGCCGTG CATACTAGGG GGTGGACTT CCGTTCGAC ATCTACATCT GGGCCCCACT
2161 GCGAGGGACA TCGGAGTCC TCGTCTGTC CCGTCTATC ACCTGTACT GCAAGCGGG GCGCAAAAA CTGCTGTATA
2241 TCTTTAAGCA GCCTTTATG AGACCACTGC AGACAACCCA GGAGGAAGAT GGTGCTCAT GCCGGTTTCC CGAGGAGGAG
2321 GAAGCGGCT GCGAGCTGAG GTTGAAGTTT TCCCGCTCAG CAGATGCTCC TGCCTACCA CAGGGCCAGA ACCAGCTGTA
2401 TAATGAGCTG AACCTGGGCA GACGCGAAGA GTATGATGTG CTGGACAAA GCGGGGGAAG AGACCCCGAA ATGGGAGGGA
2481 AGCCAAGGCG GAAAACCCC CAGGAGGGCC TGTACAATGA GCTGCAGAAG GACAAAATGG CAGAGGCTTA CAGTGAGATT
2561 GGGATGAAGG GAGAGAGACG GAGGGGAAA GCGTGTACCA GCGTGTAGC AGGCTGAGC ACAGCAACCA AAGATACTTA
2641 TGACGCACTG CACATGCAGG CACTGCCACC CAGATGAGGC AGCGGGCCA CAAACTTCTC TCTGCTAAAG CAAGCAGGTG
2721 ATGTTGAAGA AAACCCCGG CCTATGGTC TGCTGTGAC CGCACTGCTG CTGCCCTGG CTCTGCTGCT GCACGCCGA
2801 AGACCTGCCG CATAAAGGA TATCAGATG ACTCAGACCA CAAGTCCCT GAGGCCCTCC CTGGGAGACC GAGTGACAAT
2881 CTCTTGCACT GCATCACAGG GAATTAGCAA CTACCTGAAT TGGTATCAGC AGAAGCCAGA TGGCACTGTG AAAGTCTGTA
2961 TCTACTATAC CTCTAGTCTG CACAGTGGG CCTATGGTC TGCTGTGAC CGCACTGCTG CTGCCCTGG CTCTGCTGCT GCACGCCGA
3041 ATCTCAACC TGGAGCCCGA AGATATTGCC ACCTACTATT GCGAGCAGTA CTCCAAGCTG CTTATACCT TTGGCGGGG
3121 AACAAAGCTG GAGATTAAA GGGGAGGAG AGAAGCCGA GAGGAGGAT CCGAGGCGG GGGATCTGGA GGAGGAGGAA
3201 GTGAGGTGCA GCTGGTCGAA TCTGGAGGAG GACTGGTGA GCGAGGAGGA TCTCTGAAAC TGAGTTGTGC CGCTTCAGGC
3281 CTGACCTTCT CAAGCTACGC CATGAGCTGG GTGCGACAGA CACCTGAGAA GCGCTGGA TGGTTCGCTA GCATCTCCTC
3361 TGGCGGGTTC ACATACTATC CAGACTCCGT GAAAGGCAGA TTACTATCT CTCGGGATAA CGCAAGAAAT ATTCTGTACC
3441 TGCAGATGAG TTCACTGAG AGCGAGGACA CCGCAATGTA CTATTGTGC AGGACGGAAG TCGCGGGCTA TCTGGATGTC
3521 TGGGAGCTG GCACTACCGT CACCGTCTCC AGCGAGCAGA AACTGATTAG CGAAGAGGAC CTGAAAGATG AACTGTAA

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FIG. 30A

EFS promoter -Anti-human CD7 (TH69) CAR-P2A-Anti-human CD7 (TH69) PEBL (SEQ ID NO:16)

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1 GGGCAGAGCG CACATCGCCC ACAGTCCCC AGAAGTTGG GGGAGGGTC GCGATTTGAA CCGGTGCCTA GAGAAAGTGG
81 CCGGGGGTAA ACTGGGAAAG TGATGTCGTG TACTGGCTCC GCTTTTCC CGAGGTGGG GGAGAACCGT ATATAAGTGC
161 AGTAGTCGCC GTGAACGTTT TTTTCGCA CCGTTTGC GCAGAACAC AGGTGTCGTG ACCGGGGTC TAGAGGATCC
241 GGTACTCGAG GAACTGAAA ACCAGAAAGT TAACTGGTAA GTTAGTCTT TTTGTCTTTT ATTTCAGGTC CCGATCCGG

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FIG. 30B
SEQ ID NO:16 continued

321	TGGTGGTGCA	AATCAAAAGAA	CTGCTCTCTCA	GTGGATGTTG	CCTTTACTTC	TAGGAATTTCG	GCTTCCACCA	TGGCTCTGCC
401	TGTGACTGCC	CTGTGCTGTC	CCCTGGCCCT	GCTGTGCAC	GCTGTAGAC	CCGCCGATA	CAAGACATT	CAGATGATC
481	AGACTACATC	CAGCCTGTCA	GCTTCCCTGG	GCGATCGAGT	GACTATCAGC	TGTTACAGAA	GCCAGGGGAT	CAGCAATTAC
561	CTGAACTGGT	ACAGCAGAA	GCCGACGGA	ACTGTCAAGC	TGTGATCTA	CTATACTTCC	AGTCTGCATA	GCGGGGTCCC
641	TAGCCGATT	TCTGGGAGTG	GAAAGCGCAC	CAGTATAGC	CTGACCATTT	CCAACTTGA	ACCAGAGGAC	ATTGCCACCT
721	ATTACTGTCA	GCAGTATTCA	AAGCTGCCCT	ATACCTTTGG	CGAGGGACT	AAGCTGGAGA	TCAAAGCGAG	AGGGGGAGGA
801	TCAGGGGGAG	GGGGAGCGG	AGGCGGGGGG	AGTGGCGGGC	GAGGTCAGA	AGTCCAGCTG	GTGAGAGTG	GGGGCGGACT
881	GGTGAAACCT	GGGGCTCTC	TGAAACTGAG	CTGTGCAGCC	CATTCTCCTC	ATATGCTATG	TCTTGGGTGC	
961	GGCAGACCCC	AGAAAAGAGA	CTGGAGTGGG	TGGCTTCAAT	CTCTTCCGGG	GGCTTCACTT	ACTATCTCTGA	CAGCGTGAAA
1041	GGCAGATTCA	CTATCTCCAG	GGATAACGCA	CGGAATATCC	TGTATCTGCA	GATGAGCTCA	CTGAGATCCG	AGGACACCCG
1121	AATGTACTAC	TGCGCAAGAG	ACGAAAGTGC	GGGTATATCTG	GACGTGTGGG	GAGCAGGCAC	TACCGTCACC	GTGTCTAGCA
1201	CCACTACACC	TGCACCAAGG	CCTCCACAC	CGCTCCAC	TATCGCTTCC	CAGCCACTGT	CCCTGAGGCC	CGAGGCCTGC
1281	AGGCCAGCAG	CTGGCGGAGC	CGTGCATAT	AGGGGGCTGG	ACTTCGCTTG	CGACATCTAC	ATCTGGGCCC	CACTGGCAGG
1361	GACATGCGGA	GTCTGTCTGC	TGTCCCTGGT	CATCACACTG	TACTGCAAGC	GGGGCGCAA	AAAACCTGCTG	TATATCTTTA
1441	AGCAGCCTTT	CATGAGACCA	GTGCAGACAA	CCAGAGGAGA	AGATGGGTGC	TCATGCCCGT	TTCCCCGAGGA	GGAGGAAGGC
1521	GGCTGCGAGC	TGAGGGTGAA	GTTTTCCTGC	TCAGCAGATG	CTCCTGCCTA	CCAGCAGGGC	CAGAACCAGC	TGTATAATGA
1601	GCTGAACCTG	GGCAGACGCG	AAGAGTATGA	TGTGCTGGAC	AAAAGCGGGG	GAAAGACCC	CGAAATGGGA	GGGAAGCCAA
1681	GGCGGAAAA	CCCCAGGAG	GGCTGTACA	ATGAGCTGCA	GAAAGACAAA	ATGGCAGAGG	CTTACAGTGA	GATTGGGATG
1761	AAGGAGAGA	GACGGAGGGG	AAAAGGGCAC	GATGGCCTGT	ACCAGGGGCT	GAGCACAGCA	ACCAAAGATA	CTTATGACGC
1841	ACTGCACATG	CAGGCACCTG	CACCCAGATG	AGGCAGCGGC	GCCACAAACT	TCTCTCTGCT	AAAGCAAGCA	GGTGATGTTG
1921	AAGAAAACCC	CGGGCCTATG	GCTCTGCCCTG	TGACCGCACT	GCTGCTGCCC	CTGGCTCTGC	TGCTGCACGC	CGCAAGACCT
2001	GCCGCATACA	AGGATATTCA	GATGACTCAG	ACCACAAGCT	CCCTGAGCGC	CTCCCTGGGA	GACCGAGTGA	CAATCTCTTG
2081	CATGCATCA	CAGGGAATTA	GCAACTACCT	GAATTGGTAT	CAGCAGAAGC	CAGATGGCAC	TGTGAAACTG	CTGATCTACT
2161	ATACCTCTAG	TCTGCACAGT	GGGTCCCTT	CAGCATTCAG	CGGATCCGGC	TCTGGGACAG	ACTACAGCCT	GACTATCTCC
2241	AACCTGGAGC	CGAAGATAT	TGCCACCTAC	TATTGCCAGC	AGTACTCCAA	GCTGCCTTAT	ACCTTTGGCG	GGGGAACAAA
2321	GCTGGAGATT	AAAAGGGGAG	GAGGAGGAAG	GATCCGGAG	GGATCCGGATC	GCGGGGATC	TGGAGGAGGA	GGAAGTGAGG
2401	TGCAGCTGGT	CGAATCTGGA	GAGGACTTGG	TGAAGCCAGG	AGGATCTCTG	AAACTGAGTT	GTGCGCTTC	AGGCCTGACC
2481	TTCTCAAGCT	ACGCCATGAG	CTGGGTGCGA	CAGACACCTG	AGAACGGCT	GGAATGGGTC	GCTAGCATCT	CCTCTGGGGG
2561	GTTCACATAC	TATCCAGACT	CCGTGAAAGG	CAGATTACT	ATCTCTCGGG	ATAACGCAAG	AAATATTCTG	TACCTGCAGA
2641	TGAGTTCACT	GAGGAGCGAG	GACACCGCAA	TGTACTATTG	TGCCAGGGAC	GAAGTGCAGC	GCTATCTGGA	TGTCTGGGGA
2721	GCTGGCACTA	CCGTCACCGT	CTCCAGCGAG	CAGAAACTGA	TTAGCGAAGA	GGACCTGAAA	GATGAACTGT	AA

FIG. 31A

MSCV promoter -Anti-human CD7 (TH69) CAR-PGK promoter-Anti-human CD7 (TH69) PEBL (SEQ ID NO:17)

1 TTAATTAATT TATTAGTCT CCAGAAAAAG GGGGAATGA AAGACCCAC CTGTAGGTTT GCAAGCTAG CTTAAGTAAC
81 GCCATTTTGC AAGGCATGGA AATACATAA CTGAGAATAG AGAAGTTTAC ATCAAGTTTA GGAACAGAGA GACAGCAGAA
161 TATGGGCCAA ACAGGATATC TGTGGTAAGC AGTTCCTGCC CCGGCTCAGG GCCAAGAACA GATGGTCCCC AGATGCGGTC
241 CCGCCTCAG CAGTTTCTAG AGAACCATCA GATGTTTCCA GGTGCCCCA AGACCTGAA ATGACCTGT GCTTATTG
321 AACTAACCA TCAGTTCGCT TCTGGCTTCT GTGCGGCG TCTGTCTCC CGAGTCAAT AAAAGAGCC ACAACCCCTC
401 ACTGGGCGG CCAGTCCGAA TTGCGCTTCC ACCATGGCTC TGCTGTGAC TGCCCTGCTG CTGCCCCTGG CCCTGTGCT
481 GCACGCTGCT AGACCCGCG CATACAAGGA CATTAGATG ACTCAGACTA CATCAGCCT GTACGCTTCC CTGGCGATC
561 GAGTGACTAT CAGCTGTTCA GCAAGCCAGG GGATCAGCAA TTACTTGAAC TGGTACCAGC AGAAGCCCCA CGAACTGTC
641 AAGCTGCTGA TCTACTATAC TTCCAGTCTG CATAGCGGG TCCCTAGCCG ATTCTCTGG AGTGAAGCG GCACCGACTA
721 TAGCTGACC ATTTCCAACC TGAACCCAGA GGACATTGCC ACCTATTACT GTACAGACTA TTCAAAGCTG CCTATACCT
801 TTGGCGGAGG GACTAAGCTG GAGATCAAGC GAGGAGGGG AGGATCAGG GAGGAGGGGA GCGAGGCGG GGGGAGTGGC
881 GCGGAGGGT CAGAAATCCA GCTGGTCGAG APTGGGGCG GACTGTTGAA ACCTGGGGC TCTCTGAAAC TGAGCTGTGC
961 AGCCAGTGGC CTGACATTCT CCTCATATGC TATGCTTGG GTGCGGCAGA CCCAGAAAA GAGACTGGAG TGGTGGCTT
1041 CAATCTCTC CCGGGGCTTC ACTTACTATC CTGACAGCTG GAAAGGCAGA TTCACTATCT CCAGGATAA CGCACGGAAT
1121 ATCTGTATC TGCAGATGAG CTCACTGAGA TCCGAGGACA CCGCAATGTA CTACTGCGCA AGAGACGAAG TCGGGGGTA
1201 TCTGGACGTG TGGGGAGCAG GCACTACCGT CACCTGTCT AGCACCACTA CACCTGCACC AAGCCCTCCC ACACCCGCTC
1281 CCACTATCGC TTCCCAGCCA CTGTCCCTGA GCGCCAGAGC CTGCAGGCCA GCAGTGGCG GAGCCGTGCA TACTAGGGG
1361 CTGACTTCG CTTGCGACAT CTACATCTGG GCGCCACTGG CAGGACATG CCGAGTCTG CTGCTGTCCC TGGTCATCAC
1441 ACTGTACTGC AAGCGGGGCG GCAAAAACT GCTGTATATC TTTAAGCAGC CTTTCATGAG ACCAGTGCAG ACAACCCAGG
1521 AGGAAGATGG GTGCTCATGC CCGTTTCCCG AGGAGGAGGA AGCGGCTGC GAGCTGAGGG TGAAGTTTTC CCGCTCAGCA
1601 GATGCTCCTG CCTACCAGCA GGGCCAGAAC CAGCTGTATA ATGAGCTGAA CTGGGCGAGA CCGAAGAGT ATGATGTGCT
1681 GGACAAAAG CGGGGAAGAG ACCCGAAAT GGGAGGGAAG CCAAGGCGGA AAAACCCCA GAGGGCCCTG TACAATGAGC
1761 TGCAGAAAG CAATAATGCA GAGGCTTACA GTGAGATTGG GATGAAGGGA GAGAGACGGA GGGGAAAAG GCACGATGGC
1841 CTGTACCAGG GGTGAGCAC AGCAACCAA GATCTTATG AGCACTGCA CATGACCCCA CTGCCACCCA GATGACTCGA
1921 GTGAGTCGA CCGGGGCGG GGATCCCGG ACTCTAGATA ATTCTACCG GTAGGGGAG CGCTTTTCCC AAGCAGTCT
2001 GGAGCATGC CTTAGCAGC CCGCTGGG ACTTGGCGT ACACAAGTG CGCTGGCT CGCACACATT CCACATCCAC
2081 CGGTAGGCG CAACCGGCT CGTCTTTGG TGGCCCTTC GCGCCACCT CTACTCTCC COTAGTCAG AAGTTCCCC
2161 CCGCCCCGA GCTCGCTG TGCAGGACGT GACAAATGA ATGACACGT CTCACTAGTC TCGTGCAGAT GGACGACC
2241 GCTGAGCAAT GGAAGCGGT AGGCTTTGG GGCAGCGGC AATAGCAGT TTGCTCTTC GCTTCTGG CTCAGAGCT
2321 GGAAGGGGT GGTCCGGG GCGGCTCAG GCGGCGGCT AGGGCGGG GCGGCGCGG AAGTCTCT GAGGCGCGG
2401 CATCTGCAC GCTTCAAAAG CGACGCTG CCGGCTGT CTCTCTTC TCATCTCCG GCTTTCGAC TGGCCAGGT
2481 TCCACCAATGG CTCTGCCTGT GACCGCACTG CTGCTGCCCC TGCTGTGCTGCT GCTGACGCGC GCAAGACCTG CCGCATACAA

FIG. 31B

SEQ ID NO:17 continued

2561 GGATATTACG ATGACTCAGA CCACAAGCTC COTGAGCGCC TCCTGGGAG ACCGAGTGAC AATCTCTTGC AGTGCATCAC
2641 AGGGAATTAG CAACTACCTG AATTGGTATC AGCAGAAAGCC AGATGGCACT GTGAAGACTGC TGATCTACTA TACCTCTAGT
2721 CTGCACAGTG GGTCCCTC ACATTTACG GATCCGGCT CTGGACAGA CTACAGCCTG ACTATCTCCA ACCTGGAGCC
2801 CGAAGATATT GCACCTACT ATTGCCAGCA GTACTCCAAG CTGCTTATA CTTTGGCGG GGAACAAGA CTGGAGATTA
2881 AAAGGGGAGG AGAGGAAGC GGAGGAGGAG GATCCGGAGG CGGGGGATCT GGAGGAGGAG GAAATGAGGT GCAGCTGGTC
2961 GAATCTGGAG GAGGACTGGT GAAGCCAGGA GATCTCTGA AACTGAGTTG TGCCGCTTCA GGCCTGACCT TCTCAAGCTA
3041 CGCATGAGC TGGGTGCGAC AGACACCTGA GAAGCGGCTG GAATGGGTG CTAGCATCTC CTCTGGCGG TACACATACT
3121 ATCCAGACTC CGTGAAAGGC AGATTACTA TCTCTCGGA TAACGCAAGA AATATTCTGT ACCTGCAGAT GAGTTCACTG
3201 AGGAGCGAGG ACACCGCAAT GTACTATTGT GCAGGGAGC AGTGCGGG CTATCTGGAT GTCTGGGGAG CTGGCACTAC
3281 CGTCACCGTC TCCAGCGAGC AGAACTGAT TAGCGAAGAG GACCTGAAAG ATGAAGTGA ACCTGGT

FIG. 32A

MSCV promoter - Anti-human CD7 (TH69) CAR-EF1α promoter-Anti-human CD7 (TH69) PEBL (SEQ ID NO:18)

1 GGAATGAAAG ACCCACCTG TAGGTTTGGC AAGTAGCTT AAGTAACGCC ATTTGCAAG GCATGGAAA TACATAACTG
81 AGAATAGAGA AGTTAGATC AAGTTAGGA ACAGAGAGAC AGCAGAAATAT GGGCCAAACA GGATATCTGT GGTAAAGCAGT
161 TCCTGCCCCG GCTCAGGGCC AAGAACAGAT GGTCCCCAGA TGGGTCCCG CCTCAGCAG TTCTAGAGA ACCATCAGAT
241 GTTCCAGGG TGCCTCAAGG ACCTGAAATG ACCTGTGCC TTATTGAAC TAACCAATCA GTTCGCTTCT CGCTTCTGTT
321 CGCGCGCTT TGCCTCCCGA GCTCAATAAA AGAGCCCAACA ACCCTCACT CGCGCGCCA GTCCGAATTC GGCTTCCACC
401 ATGGCTCTGC CTGTGACTGC CCTGTGCTG CCTGTGGCC TGCTGCTGCA CGCTGCTAGA CCCGCCGCAT ACAAGGACAT
481 TCAGATGACT CAGACTACAT CCAGCCTGTC AGCTTCCCTG GCGATCAG TGACTATCAG CTGTTACAGA AGCCAGGGA
561 TCAGCAATTA CCTGAAGTGG TACCAGCAGA AGCCCGACGG AACTGTCAAG CTGCTGATCT ACTATACTTC CAGTCTGCAT
641 AGCGGGGTCC CTAGCCGATT CTCTGGGAGT GGAAGCGGCA CCGACTATAG CCTGACCATT TCCAACCTGG AACAGAGGA
721 CATGCCACC TATTACTGTC ACAGTATTC AAAGTGGCC TATACCTTTG GCGGAGGGAC TAAGCTGGAG ATCAAGCCGAG
801 GAGGGGGAG ATCAGGGGA GGGGGGAGC GAGCGGGGG GAGTGGCGG GAGGGTCAG AAGTCCAGCT GGTGAGAGT
881 GGGGGCGGAC TGGTGAACCT TGGGGGCTCT CTGAAACTGA GCTGTGCAGC CAGTGGCCTG ACATTCTCCT CATATGCTAT
961 GTCTTGGGTG CGGCAGACCC CAGAAAAGAG ACTGGAGTGG GTGGCTTCAA TCTCTTCCCG GGGCTTCACT TACTATCCTG
1041 ACAGCGTGAA AGGCAGATTC ACTATCTCCA GGGATAACGC ACAGAAATAT CTGTATCTGC AGATGAGCTC ACTGAGATCC
1121 GAGGACACCG CAATGTACTA CTGCGCAAGA GACGAAGTGC GGGGGTATCT GGACGTGTGG GGAGCAGGCA CTACCGTCAC
1201 CGTGTCTAGC ACCACTACAC CTGCACCAAG GCTCCCAACA CCGCTCCCA CTATCGCTTC CCAGCCACTG TCCCTGAGGC
1281 CCGAGGCTTG CAGGCCAGCA GCTGGCGGAG CCGTGCATAC TAGGGGGCTG GACTTCGCTT GCGACATCTA CATCTGGGCC
1361 CCACTGGCAG GGACATGCGG AGTCTCTGCTG CTGCTCCCTGG TCATCACACT GTACTGCAAG CCGGGGGCGCA AAAAAGTCTG

FIG. 32B
SEQ ID NO:18 continued

1441 GTATATCTTT AAGCAGCCTT TCATGAGACC AFTGCAGACA ACCCAGGAGG AAGATGGGTG CTCATGCCGG TTTCCCGAGG
 1521 AGGAGGAAG CGGTGCGAG CTGAGGGTGA AGTTTCCCG CTCACAGAT GCTCCTGCCT ACCAGCAGG CCAGAATCAG
 1601 CTGTATAATG AGCTGAACCT GGCAGACGC GAAGAGTATG ATGTGCTGGA CAAAAGGCGG GGAAGAGACC CCGAAATGGG
 1681 AGGAAGCCA AGCGGAAAA ACCCCAGGA GGCCTGTATC AATGAGCTGC AGAAGGACAA AATGGCAGAG GCTTACAGTG
 1761 AATATGGGAT GAAGGGAGAG AGACGGAGGG GAAAAGGCA CGATGGCCTG TACCAGGGGC TGAGCACAGC AACCAAAGAT
 1841 ACTTATGACG CACTGCACAT GCAGGCACTG CCACCCAGAT GAGTCGACGG CTCGGGTGCC CGTCAGTGGG CAGAGCGCAC
 1921 ATCGCCACA GTCCCCGAGA AGTTGGGGGG AGGGTCCGC AATTGAACCG GTGCCTAGAG AAGGTGGCG GGGTAAACT
 2001 GGAAGATGA TGTCTGTATC TGGTCCGCC TTTTCCCGA GGTGGGGGA GAACCGTATA TAAATGCAGT AGTCGCCGTG
 2081 AACGTTCTTT TCGCAACGG GTTTCGCCGC AGAACACAG TAAGTGCCGT GTGTGGTTCC CGCGGCCCTG GCGTCTTTAC
 2161 GGGTTATGGC CTTGCGTGC CTGAATTAC TTCCACCTGG TGCAGTACG TGATTCTTGA TCCCGAGCTT CGGTTGGAA
 2241 GTGGTGGGA GAGTTCGAG CTTGCGCTT AAGGACCCC TTGCGCTCGT GCTTGAATTG AGCCTGGCC TGGCGCTGG
 2321 GCGCGCCGG TCGCAATCTG GTGCACCTT CGGCTGTC TCGTGTCTT CGATAAGTCT CTAGCCATTT AAAATTTTG
 2401 ATGACCTGCT GCGACGCTTT TTTTCTGGCA AGATAGTCTT GTAAATGCGG GCGAAGATCT GCACACTGGT ATTCGGTTT
 2481 TTGGGGCCGC GGGCGGCGAC GGGCCCCGTG CGTCCCAGC CACATGTTCC GCGAGGCGG GCGTCCGAG CCGGCCACCG
 2561 AGAATCGGAC GGGGTAGTC TCAAGCTGGC CGGCTGCTC TGGTGCCCTG CCGCGCGCG CCGTGTATCG CCGCGCCCTG
 2641 GCGGCAAGG CTGGCCCGGT CGGCACCACT TGGTGAGCG GAAAGATGGC CGGTTCCCG CCGTGTGCA GCGAGCTCAA
 2721 AATGGAGGAC GCGGCGCTCG GGAGAGCGG GGGTGAGTC ACCACACAA AGGAAAGGG CTTTCCGTC CTCAGCCGTC
 2801 GCTTCATGT ACTCCACGGA GTACCGGGCG CGTCCAGC ACCTCGATTA GTTCTCGAGC TTTTGGAGTA CGTCGCTCTT
 2881 AGGTTGGGG GAGGGGTTTT ATCGGATGGA GTTCCCCAC ACTGAGTGGG TGGAGACTGA AGTAGGCCA GCTTGGCACT
 2961 TGATGTAATT CTCCTTGGAA TTTGCCCTTT TTGAGTTTGG ATCTTGGTTC ATTCTAAGC CTCAGACAGT GGTCAAAGT
 3041 TTTTCTTTC CATTTCAGT GTCGTGACC GGGGCTTCC ACCATGGCTC TGCCTGTGAC CGCACTGCTG CTGCCCCCTGG
 3121 CTCTGTGCT GCACGCCGCA AGACCTGCCG CATACAAGGA TATTCAGATG ACTCAGACCA CAAGCTCCCT GAGCGCCTCC
 3201 CTGGGAGACC GAGTGACAA CTCTTGCACT GCATCACAGG GAATTAGCAA CTACCTGAAT TGGTATCAGC AGAAGCCAGA
 3281 TGGCACTGTG AAATGCTGA TCTACTATAC CTCTAGTCTG CACAGTGGG TCCCTCAGC ATTCAGCGGA TCCGGCTCTG
 3361 GGACAGACTA CAGCCTGACT ATCTCCAACC TGGAGCCCCA AGATATTGCC ACCTACTATT GCCAGCAGTA CTCCAAGCTG
 3441 CCTATACCT TTGGCGGGG AACAAAGCTG GAGATTAAA GGGGAGGAG AGGAAGCGGA GGAGGAGGAT CCGGAGGCGG
 3521 GGGATCTGGA GGAGGAGGAA GTGAGGTGCA GTGGTCTGAA TCTGGAGGAG GACTGGTGA GCGAGGAGGA TCTCTGAAC
 3601 TGAGTTGTGC CGCTTCAGC CTGACCTTCT CAAGTACGC CATGAGCTGG GTGCGACAGA CACCTGAGAA GCGGCTGGAA
 3681 TGGGTCGCTA GCATCTCCTC TGGCGGTTTC ACATACTATC CAGACTCCGT GAAAGGCGA TTACTATCT CTCGGGATAA
 3761 CGCAAGAAAT ATTCTGTACC TGCAGATGAG TTCACTGAGG AGCGAGGACA CGCAATGTA CTATTGTGCC AGGACGGAAG
 3841 TGCGCGGCTA TCTGGATGTC TGGGAGCTG GCACTACCGT CACCGTCTCC AGCGAGCAGA AACTGATTAG CGAAGAGGAC
 3921 CTGAAAGATG AACTGTAA

FIG. 33A

MSCV promoter-anti-human CD7 (TH69) CAR-EFS promoter- Anti-human CD7 (TH69) PEBL (SEQ ID NO:19)

1 GGAAATGAAAG ACCCCACCTG TAGGTTTGGC AAGCTAGCTT AAGTAACGCC ATTTTGCAAG GCATGGAAAA TACATAACTG
 81 AGAAATAGAGA AGTTCAGATC AAGGTTAGGA ACAGAGAGAC AGCAGAATAT GGCCAAACA GGATATCTGT GGTAAAGCAGT
 161 TCTGCCCCG GCTCAGGGC AAGAACAGAT GGTCCCCAGA TGGGTCCCG CCGTCAGCAG TTCTAGAGA ACCATCAGAT
 241 GTTCACAGG TGCCCCAAG ACCTGAAATG ACCGTGTGCC TTATTTGAAC TAACCAATCA GTTCGCTTCT CGCTTCTGTT
 321 CGCGCGCTTC TGTCCCCGA GCTCAATAAA AGACCCACA ACCCTCACT CGGCGGCCA GTCC/GAATTC GGCTCCACC/
 401 ATGGCTCTGC CTGTGACTGC CCTGTGCTG CCGCTGGCCC TGCTGTGCA CGCTGCTAGA CCGGCCGCAT ACAAGGACAT
 481 TCAGATGACT CAGACTACAT CCAGCTGTG AGTTCCTG GCGATCGAG TGAATATCAG CTGTTACGCA AGCCAGGGGA
 561 TCAGCAATTA CCTGAACCTG TACCAGACA AGCCGACGG AACTGTCAAG CTGCTGATCT ACTATACTTC CAGTCTGCAT
 641 AGCGGGGTCC CTAGCCGATT CTCTGGGAGT GGAAGCGGCA CCGACTATAG CCGTACCATT TCCAACCTGG AACAGAGGA
 721 CATTGCCACC TATTACTGTC AGCAGTATTC AAAGCTGCC TATACCTTTG GCGAGGGAC TAAAGCTGGAG ATCAAGCGAG
 801 GAGGGGAGG ATCAGGGGGA GGGGGGAG GAGTGGCGG GAGTGGCTAG AAGTCCAGT GGTCGAGAGT
 881 GGGGCGGAC TGGTAAACC TGGGGGCTCT CTGAAACTGA CTGTGTCAG CAGTGGCCTG ACATTTCTCT CATATGCTAT
 961 GTCTTTGGTG CCGCAGACCC CAGAAAAGAG ACTGGAGTG GTGGCTTCAA TCTCTTCCGG GGGCTTCACT TACTATCCTG
 1041 ACAGCGTGAA AGGCAGATTC ACTATCTCCA GGGAATACGC ACAGAAATATC CTGTATCTGC AGATGAGCTC ACTGAGATCC
 1121 GAGGACACCG CAATGTACTA CTGCGCAAGA GACGAAGTGC GGGGGTATCT GGACGTGTGG GGAGCAGGCA CTACCGTAC
 1201 CGTGTCTAG ACCACTACAC CTGCACCAAG GCCTCCACA CCCGCTCCCA CTATCGCTTC CCAGCCACTG TCCCTGAGGC
 1281 CCGAGGCCTG CAGGCCAGCA GCTGGCGGAG CCGTGCAATC TAGGGGCTG GACTTCGCTT GCGACATCTA CATCTGGGCC
 1361 CCACTGGCAG GGACATGCGG APTCCTGCTG CTGTCCCTGG TCATCACACT GTACTGCAAG CCGGGGCGCA AAAAACTGCT
 1441 GTATATCTTT AAGCAGCCTT TCATGAGACC AGTCAGACA ACCCAGGAG AAGATGGGTG CTCATGCCGG TTTCCTCAGG
 1521 AGGAGGAAG CCGCTGCGAG CTGAGGGTGA AGTTTCCCG CTCAGCAGAT GCTCCTGCCT ACCAGCAGG CCAGAACCAG
 1601 CTGTATAATG AGCTGAACCT GGCAGACGC GAAGAGTATG ATGTGCTGGA CAAAAGGCGG GGAAGAGACC CCGAAATGGG
 1681 AGGGAAGCCA AGCGGGAAGA ACCCCAGGA GGGCTGTAC AATGAGCTGC AGAAGGACAA AATGGCAGAG GCTTACAGTG
 1761 AGATTGGGAT GAAGGAGAG AGACGGAGG GAAAAGGCA CGATGGCCTG TACCAGGGG TGAGCACAGC AACCAAAGAT
 1841 ACTTATGAC CACTGCACAT GCAGGCCTG CCACCCAGAT GAGTCGACG GCAGAGCGCA CATCGCCAC AGTCCCCGAG
 1921 AAGTTGGGG GAGGGGTGCG CAATTGAACC GTGCTCTAGA GAAGGTGGC CGGGGTAAC TGGGAAAGTG ATGTCGTGTA
 2001 TGGCTCCG CTTTTCCCG AGGTGGGG AGAACCTAT ATAAGTGCAG TAGTCGCGT GAACGTCTTT TTTCGCAACG
 2081 GGTTTGCCG CAGAACACAG GTGTCGTGAC CCGGGGTCTA GAGGATCCG TACTCGAGA ACTGAAAAAC CAGAAAGTTA
 2161 ACTGGTAAGT TTAGTCTTTT TGTCTTTTAT TTCAGGTCC GATCCGGTG GTGGTGCAA TCAAAAGAACT GCTCCTCAGT
 2241 GGATGTTGCC TTACTTCTA GCGCGGGG TTCCACCATG GCTCTGCTG TGACCGCACT GCTGCTGCC CTGGCTCTGC
 2321 TGCTGCACG CGCAAGACCT GCGCATACA AGGATATTCA GATGACTCAG ACCACAAGCT CCCTGAGCG CTCCTGGGA
 2401 GACCGAGTGA CAATCTCTTG CAGTGCAATCA CAGGGAATTA GCAACTACCT GAATTGGTAT CAGCAGAAGC CAGATGGCAC

FIG. 33B
SEQ ID NO:19 continued

2481 TGTGAAACTG CTGATCTACT ATACCTCTAG TGTGCACAGT GGGTCCCT CACGATTACG CGGATCCGGC TCTGGGACAG
2561 ACTACAGCCT GACTATCTCC AACCTGGAGC CGAAGATAT TGGCACCTAC TATTGCCAGC AGTACTCCAA GCTGCCCTTAT
2641 ACCTTTGGCG GGGAAACAAA GCTGGAGATT AAAAGGGAG GAGGAGGAG CGATCCGGAG GCGGGGGATC
2721 TGGAGGAGGA GGAAGTGAGG TGCACTGAGT CGAATCTGGA GAGGACTGG TGAAGCCAGG AGGATCTCTG AAACCTGAGTT
2801 GTGCCGCTTC AGGCTGACC TTCTCAAGCT ACGCCATGAG CTGGGTGCGA CAGACACCTG AGAAGCGGCT GGAATGGGTC
2881 GCTAGCATCT CCTCTGGCGG GTTCACATAC TATCCAGACT CCGTGAAGG CAGATTACT ATCTCTCGG ATAACGCAAG
2961 AAATATTCTG TACCTGCAGA TGAGTTCACT GAGGAGCGAG GACACCGCAA TTTACTATTG TGCCAGGGAC GAAGTGCGCG
3041 GCTATCTGGA TGTCTGGGA GCTGGCACTA CGTCAACCGT CTCCAGCGAG CAGAAACTGA TTAGCGAAGA GGACCTGAAA
3121 GATGAACCTGT AA

FIG. 34A

PGK promoter-anti-human CD7 (3A1F) CAR-EF1a promoter- Anti-human CD7 (TH69) PEBL (SEQ ID NO:20)

1 ATTCTACCGG GTAGGGGAGG CGCTTTTCCC AAGCAGTCT GGAGCATGCG CTTAGCAGC CCGCTGGGC ACTTGGCGCT
81 ACACAAAGTG CCTCTGGCCT CGACACATT CCACATCCAC CGGTAGGCGC CAACGGCTC GGTCTTTGG TGGCCCCCTC
161 GCGCCACCTT CTACTCCTCC CCTAGTCAGG AAGTTCCCC CCGCCCCGCA GCTCGCGTCG TGCAGGACGT GACAAATGGA
241 AGTAGCACGT CTCACTAGTC TCGTGACAT GGACAGCAC GCTGAGCAAT GGAAGCGGGT AGGCTTTGG GCACGCGGCC
321 AATAGCAGCT TTGCTCCTTC GCTTCTGGG CTCAGAGGCT GGAAGGGGT GGTCCGGG GCGGCTCAG GCGCGGGCTC
401 AGGGCGGGG CCGGCGCCCG AAGTCTCTCC GGAGGCCCGG CATCTGCAC GGTCAAAG CGCACGTCTG CCGGCTGTT
481 CTCTCTTCC TCATCTCCG GCTTTCGAG AATTGGCTT CCACCATGGC TCTGCCCGTC ACCGCTCTGC TGTGCTCTCT
561 GGCCTCTGCTG CTGCACGCTG CTCGACCACA GGTCCAGCTG CAGGAGTCAG GAGTGAGCT GGTGAAGCCA GGGGCAAGCG
641 TCAAACTGTC CTGCAAGGCC TCTGGATATA CATTCATAG CTACTGGATG CACTGGGTGA AACAGAGACC CGGACAGGGC
721 CTGGAGTGA TCGGAAAGAT TAACCTTAGC AATGGCAGGA CCAACTACAA CGAAAAGTTT AAATCCAAG CAACCTGAC
801 AFTGGACAAG AGCTCCTCTA CAGCCTACAT GCAGCTGAGT TCACTGACTT CAGAGGATAG CGCAGGTGAC TATTGCGCCA
881 GAGCGGGGT CTACTATGAC CTGTACTATT ACGCCCTGGA TTATTGGGG CAGGGAACCA CAGTGACTGT CAGTCCGGA
961 GGAGGAGGAA GCGGAGGAGG AGGATCCGGA GTGATCCGGA GTGACATCGA GGTGACCCAG AGTCTGTCTA CACTGAGCGT
1041 GACTCCAGG GATTCTGTCA GTCTGTCTG TCGGCAAGC CAGTCCATCT CTAACAATCT GCATGGTAC CAGCAGAAAT
1121 CCGATGAATC TCCACGACTG CTGATTAAGA GTGCCCTACA GAGCATCTCC GGCATTCCCT CCGGTTCTC TGGCAGTGGG
1201 TCAGGAACTG ACTTTACCTT GAGTATTAA CAGATTAAG CAGAAAGATT CCGCATGTAT TTTTGCCAGC AGAGCAATTC
1281 CTGGCCCTAC ACTTTCGGAG GCGGGACCAA ACTGGAGATC AAGCGGACTA CCACACCAG TCCAAGACCA CCTACCCCTG
1361 CACCAACAAT TGCTAGTCAG CCAGTGTAC TGAGACCAGA AGCATGTAGG CCGTGCAGTG GAGGAGCTGT GCACACCAGA
1441 GGCTGGACT TTGCTGCGA TATCTACATT TGGCTCTCTC TGGCAGGAAC CTGTGGCGTG CTGTGCTGT CTCTGGTCAAT
1521 CACACTGTAT TGCAAACGAG GCGGGAAGAA ACTGCTGTAC ATTTTCAAGC AGCCCTTTAT GAGGCCCTGTG CAGACTACCC

FIG. 34B

SEQ ID NO:20 continued

1601 AGGAGGAAGA CGGCTGCAGC TFCGCTTCC CTGAGGAAGA GGAAGGGGA TGTGAGCTGC GCGTCAAAT TTCTCGAAGT
 1681 GCAGATGCC CAGCTTATCA GCAGGCCAG AACAGCTGT ACAACGAGCT GAATCTGGG CGGAGAGAGG AATATGACGT
 1761 GCTGGATAAG AGCGAGGAA GGGACCCAGA AATGGGAGG AAACACGAC GGAAGAACC CCAGAGGGC CTGTATAATG
 1841 AACTGCAGAA AGACAAGATG GCAGAGGCTT ACTCTGAAT CGGATGAAA GGAGAGAGAA GCGCGGGCAA GGGGCATGAT
 1921 GGCTGTACC AGGGCTGAG CACAGCAACC AAAGACACCT ATGACGCACT GCACATGCAG GCACTGCCAC CACGGTAATG
 2001 AGTCGACGG TCCGGTGCC CTCAGTGGC AGAGCCACA TCCCCAGAA GTTGGGGGA GGGTCCGCA
 2081 ATTGAACCG TGCCTAGAGA AGGTGGCGG GGTAAACTG GAAAGTATG TCGTGTACT GGTCCGCCCT TTTTCCCGAG
 2161 GTGGGGGAG AACGTATAT AAGTGCAGTA GTCGCCGTGA AGTTCCTTT TCGCAACGG TTTGCGGCCA GAACACAGGT
 2241 AAGTCCCGT TGTGGTTCC GCGGCCCTG CTTCTTAC GGTATGACC CTTGCTGCC TTGAATTACT TCCACTGGC
 2321 TGCAGTACGT GATCTTTGAT CCCGAGCTT CCGTTGGAAG TGGTGGGAG AGTTCGAGG CTTGCGCTTA AGGAGCCCT
 2401 TCGCCTCGT CTGAGTTGA GGCCTGGCT GCGCGCTGG GCGCCGCGT CGCAATCTGG TGGCACCTTC GCGCTGTCT
 2481 CGCTGCTTC GATAAGTCTC TAGCCATTTA AAATTTTGA TGACCTGCTG CGACGCTTT TTCTGGCAA GATAGTCTTG
 2561 TAAATGCGG CCAAGATCTG CACACTGGTA TFCGGTTTT TGGGCCGCG GCGGCCGAC GGGCCCGTGC GTCCAGCGC
 2641 ACATGTTCCG CGAGCGGGG CTTGCGAGC GGGCCACCGA GAATCGGAC GGGGTAGTCT CAAGCTGGCC GGCCTGCTCT
 2721 GTGCTTGG CTGCGCCCG CTTGATATCG CCGCCCTGG GCGCAAGGC TGGCCCGTGC GGCACCACTT GCGTGAGCGG
 2801 AAAGATGGC GTTCCCGG CTTGCTGAG GAGCTCAA ATGGAGGAG CCGCGCTCG GAGAGCGGC GGTGAGTCA
 2881 CCACACAAA GAAAAGGG CTTTCCGTCC TCAGCCGTG CTTATGTA CTCACGAG TACCAGGCG CGTCCAGGCA
 2961 CTTGATTAG TTCTCGAGCT TTGGAGTAC GTCGTCTTTA GGTGGGGG AGGGTTTTA TGGGATGGAG TTTCCCCACA
 3041 CTGAGTGGT GGAGACTGAA GTTAGGCCAG CTTGGCACTT GATGTAATC TCCTTGAAT TTGCCCTTTT TGAGTTTGA
 3121 TCTTGGTTCA TCTCAAGCC TCAGACAGTG GTCAAAGT TTTTCTTC ATTCAAGTG TCGTGACCG GGGCTTCCA
 3201 CCATGGCTCT GCTGTGACC GCACTGTGC TGGCCCTGG TGGCTGCTG CAGCCGCAA GACCTGCCG ATACAAGGAT
 3281 ATTGAGATGA CTCAGACCAC AAGTCCCTG AGCCCTCC TGGGAGACC AGTGACAATC TCTTGCACTG CATCACAGG
 3361 AATTAGCAAC TACCTGAAT GGTATCAGCA GAAGCCAGAT GGCACGTGA AACTGCTGAT CTACTATACC TCTAGTCTGC
 3441 ACAGTGGGT CCGCTCAGA TTCAGCGAT CCGCTCTGG GACAGACTAC AGCTGACTA TCTCCAACCT GGAGCCCGAA
 3521 GATATTGCCA CCTACTATTG CCAGCAGTAC TCCAAGTGC CTTATACCT TGGCGGGGA ACAAGCTGG AGATTAAAG
 3601 GGGAGGAGA GGAAGCGAG GAGGAGATC CGAGGCGG GATCTGGAG GAGGAGAG TGAGGTGCAG CTGGTCGAAT
 3681 CTGAGGAGG ACTGGTGAAG CCAGGAGGAT CTTGAACT GAGTGTGCC GTTCAGGC TGACCTTCTC AAGCTACGCC
 3761 ATGAGTGGG TCGACAGAC ACCTGAGAAT CCGTGGTAA GGTGCTAG CATCTCTCT GCGGGTTCA CACTATCC
 3841 AGACTCCGTG AAAGGACAG TTACTATCTC TCGGATAAC GCAAGAAATA TTCTGTACCT GCAGATGAGT TCACTAGGGA
 3921 GCGAGGACAC CGCAATGTAC TATTGTCCA GAGACGAAGT GCGCGCTAT CTGGATGCT GGGAGCTGG CACTACCGTC
 4001 ACCGTCTCCA GCGAGCAGAA ACTGATTAG GAAGAGGACC TGAAGATGA ACTGTAA

FIG. 35A

PGK promoter-anti-human CD7 (TH69) CAR -EF1a promoter- Anti-human CD7 (3A1F) PEBL (SEQ ID NO:21)

1 ATCTACCGG GTAGGGGAGG CGCTTTTCCC AAGCAGTCT GGAGCATGCG CTTAGCAGC CCGCTGGG ACTTGGCGCT
81 ACACAAAGTGG CCTCTGGCCT CGACACATT CCACATCCAC CGTAGGGCG CAACGGGCTC GCTCTTTGG TGGCCCTTC
161 GCGCCACCTT CTACTCCTCC CCTAGTCAGG AAGTTCCCC CGCCCCCGCA GCTCGGCTCG TGCAGGACGT GACAAATGGA
241 AGTAGCACGT CTCACTAGTC TCGTCAGAT GGACAGCAC GGTGAGCAAT GGAAGCGGGT AGGCTTTGG GGCAGCGGCC
321 AATAGCAGCT TTGCTCCTTC GCTTCTGGG CTCAGAGGT GGAAGGGGT GGTCCGGG GCGGGCTCAG GGGCGGGCTC
401 AGGGCGGGG CGGGCGCCG AAGTCTCTCC GAGGCCCGG CATCTGCAC GGTCAAAAG GGCAGCTCTG CCGCGCTGTT
481 CTCTCTTCC TCATCTCCG GCTTTCCGAG AATTGGCTT CCACCATGGC TCTGCCTGTG ACTGCCCTGC TGCTGCCCTT
561 GGCCTGTCTG CTGCAGCTG CTAGACCCG CGCATACAAG GCATTCAGA TGACTCAGC TACATCCAGC CTGTACGCTT
641 CCTGGGCGA TCGAGTGACT ATCAGCTGTT CAGCAAGCCA GGGATCAGC AATTACCTGA ACTGGTACCA GCAGAAGCCC
721 GACGGAATG TCAAGCTGCT GATCTACTAT ACTTCCAGTC TGCATAGCG GGTCCCTAGC CGATTCTCTG GGAGTGAAG
801 CGGCACCGAC TATAGCCTGA CCATTCCAA CCTGGAACCA GAGACATTG CCACCTATTA CTGTACGAC TATTCAAAGC
881 TGGCCTATAC CTTTGGCGGA GGGACTAAGC TGGAGATCAA GCGAGGAGG GAGGATCAG GGGAGGGGG GAGCGGAGGC
961 GGGGGAGTG GCGCGGAGG GTCAGAAGTC CAGCTGGTCG AGAGTGGGG CGGACTGGT AAACCTGGG GCTCTCTGAA
1041 ACTGAGCTGT GCAGCCAGTG GCTGACATT CTCCTCATAT CTCTGCTTT GGTGCGGCA GATCCAGAA AAGAGACTGG
1121 AFTGGGTGG TTCAATCTCT TCCGGGGCT TCACTTACTA TCCTGACAG GTGAAAGGA GATTCATAT CTCAGGGAT
1201 AAGCACGGA ATATCTGTA TCTGCAGAT AGCTCACTGA GATCCGAGG CACCGCAATG TACTACTGCG CAAGAGACGA
1281 AFTGCGGGG TATCTGGAC TGTGGGAGC AGGCACTACC GTACCCGTGT CTAGCACCA TACACCTGCA CCAAGGCCTC
1361 CCACACCCG TCCCACTATC GCTTCCAGC CACTGTCCCT GAGGCCCGAG GCCTGCAGG CAGCAGCTGG CCGAGCCGTG
1441 CATACTAGG GGTGGACTT CGCTTGGAC ATCTACATCT GGGCCCCACT GGCAGGGACA TCGGAGTCC TGCTGCTGTC
1521 CCTGGTCATC AACTGTACT GCAAGCGGG GCGCAAAAA CTGCTGTATA TCTTTAAGCA GCCTTTCATG AGACCACTGC
1601 AGACAACCA GGTGCTCAT GGTGCTCAT GCGGTTTCC CGAGGAGGAG GAAGCGGCT GCGAGCTGAG GGTGAAGTTT
1681 TCCGCTCAG CAGATGCTCC TGCTTACCAG CAGGGCCAGA ACCAGCTGA TAATGAGCTG AACCTGGGCA GACCGAAGA
1761 GTATGATGT CTGGACAAA GCGGGGGAAG AGACCCCGAA ATGGGAGGA AGCCAAGGCG GAAAAACCCC CAGGAGGGCC
1841 TGTACAATGA GCTGCAGAAG GACAAAATGG CAGAGGCTTA CAGTGAGATT GGGATGAAGG GAGAGAGACG GAGGGGAAAA
1921 GGGCACGATG GCCTGTACCA GGGGCTGAGC ACAGCAACCA AAGATACTTA TGACGCACTG CACATGCAG CACTGCCACC
2001 CAGATGATC GACGGCTCC GTGCCCTCA GTGGCCAGG CGACATCCG CCACAGTCC CGAGAAGTG GGGGAGGGG
2081 TCGCAATTG AACCGGTGC TAGAGAAGT GCGCGGGGT AAACCTGGAA ACTGATGCG TGTACTGGCT CCGCTTTT
2161 CCGAGGGTG GGGGAGAACC GTATATAAGT GCGTAGTGC CGTGAACGT TCTTTTTCG ACGGGTTTG CCGCAGAAC
2241 ACAGGTAAGT GCGGTGTGT GTTCCCGCG GCTTGGCTT TTAGGGGTT ATGGCCCTTG CTGCTCTTGA ATTACTTCCA
2321 CTTGGCTGCA GTACGTGATT CTGTATCCG AGTTCCGGT TGAAGATGG TGGGAGATT CGAGGCTTG CGCTTAAGGA
2401 GCGCTTCGC CTCGTGCTTG AGTTGAGGC TGGGCGCG CCGCTGCGA ATCTGGTGC ACCTTCGCG
2481 CTGTCTCGCT GCTTTCGATA AGTCTCTAGC CATTTAAAT TTTTGTGAC CTGCTGCGAC GCTTTTTC TGGCAAGATA

FIG. 35B

SEQ ID NO:21 continued

2561 GTCTGTAA TCGCGGCCAA GATCTGCACA CTGGTATTTC GFTTTTGGG GCGCGGGCG GCGACGGGGC CCGTGCCTCC
 2641 CAGGCACAT GTTCGGCGAG GCGGGCCCTG CGAGCGCGGC CACCGAGAA TAGTCTCAAG CTGGCCCGGC
 2721 TGCTCTGGTG CCGTGGCCCTG CCGCGCCCTG TATCGCCCTG CCGTGGCGG CAAGCTGGC CCGTCCGGCA CCAGTTCCGT
 2801 GAGCGGAAAG ATGGCCGCTT CCGCGCCCTG CTGACGGAG CTCAAAATGG AGGACGGGC GCTCGGGAGA GCGGGCGGGT
 2881 GAGTCACCA CACAAAGGAA AAGGCGCTT CCGTCCCTG CCGTGGCTT ATGTACTCC ACGGAGTACC GCGCGCCGTC
 2961 CAGGCACCTC GATTAGTTCT CGAGCTTTTG GAGTACGTCG TCTTTAGGTT GGGGGGAGG GTTTTATGCG ATGAGTTTC
 3041 CCCACACTGA GTGGGTGGAG ACTGAAGTTA GGGCAGCTTG GCAGCTGATG TAATTCCTCT TGGAAATTTGC CTTTCTTGAG
 3121 TTTGGATCTT GGTTCATTCT CAAGCCTCAG ACAGTGGTTC AAAGTTTCTT TCTTCCATTT CAGGTGTCGT GACCCGGGG
 3201 CTTCCACCAT GGCTCTGCC GTACCGCTC TGCTGCTGCT TCTGGCTCTG CTGCTGCACG CCGCAAGACC CCAGTCCAG
 3281 CTGCAGGAGT CAGGGGCAGA GCTGGTGAAA CCGGAGCCA GTGTCAAACT GTCTGTAAAG GCCAGCGGCT ATACTTTAC
 3361 CAGCTACTGG ATGCACTGGG TGAACACAG GGCAGGACAG GGCCTGGAGT GGATCGGCAA GATTAAACCC AGCAATGGG
 3441 GCACCAACTA CAACGAAAAG TTAAATCCA AGCTACACT GACTGTGAC AAGAGCTCCT CTACCCGATA CATGCAGCTG
 3521 AGTTCACCTG CATCTGAAGA TAGTGCCGTG TACTATTGCG CCAGAGCGG GGTCTACTAT GACCTGTACT ATTACGCAC
 3601 GGAATATTGG GGCAGGGAA CCACAGTGAC GTGACGCTCC CGAGGAGGAG GATCCGGCTCT GGGGAGGGC
 3681 GGAGTGACAT CGAGCTGACA CAGTCTCCAG CCACTCTGAG CTGACCCCTC GCGATTCCTG TCAGTCTGTC ATGTAGAGCT
 3761 AGCAGTCCA TCTCTAACAA TCTGCACTGG TACCAGCAGA AATCACATGA AAGCCCTCGG CTGCTGATTA AGAGTGCTTC
 3841 ACAGAGCATC TCGGGGATTC CAAGCAGATT CTCTGGCAGT GGGTCAGGAA CCGACTTTAC ACTGTCCATT AACTCTGTGG
 3921 AGACCGAAGA TTTCGGCATG TATTTTGGC AGCAGAGCAA TTCCTGGCCT TACACATTCG GAGGCGGGAC TAAACTGGAG
 4001 ATTAAGAGGG AGCAGAAACT GATTAGCGAA GAGGACCTGA AGGACGAAC GTGA

FIG. 36A

PGK promoter-anti-human CD7 (TH69) CAR -EF1a promoter- Anti-human CD7 (TH69) PEEL (SEQ ID NO:22)

1 ATTCTACCG GTAGGGGAGG CGTTTTCCTC AAGCAGTCT GGAGCATGG CTTTAGCAG CCGGCTGGG ACTTGGCGCT
 81 ACACAAAGTG CCTCTGGCCT CGCACACATT CCACATCCAC CGTAGGCGC CAACCGGCTC CGTTCCTTGG TGGCCCTTC
 161 GCGCACCTT CTACTCCTCC CCTAGTCAG AAGTCCCTC CCGCCCGCA GCTCGGCTG TGCAGGACGT GACAAATGA
 241 AGTAGCACGT CTCACATAGT TCGTGACAT GGACAGCAC GGTGAGCAAT GGAAGCGGT AGGCTTTGG GCGACGCGC
 321 AATAGCAGT TTGCTCCTTC GCTTCTGGG CTCAGAGCTT GGAAGGGGT GGGTCCGGG GCGGCTCAG GGGCGGCTC
 401 AGGGCGGGG GGGCGCCCG AAGTCTCTC GAGGCCCGG CATTCGAC GCTTCAAA GCGACGCTG CCGGCTGTT
 481 CTCTCTTCC TCATCTCCG GCCTTCGAG AATTCGCTT CCACATGGC TCTGCTGTG ACTGCCCTGC TGCTGCCCTT
 561 GGCCTGCTG CTGCACGCTG CTAGACCCG CGCATACAAG GACATTCAGA TGAATCCAG TACATCCAG CTGTACGTT
 641 CCCTGGGCGA TCGAGTGACT ATCAGCTGTT CAGCAAGCCA GGGGATCAGC AATTACCTGA ACTGGTACCA GCAGAAGCCC

FIG. 36B

SEQ ID NO:22 continued

721 GACGAACTG TCAAGCTGCT GATCTACTAT ACTTCCAGTC TGCATAGCGG GGTCCCTAGC CGATTCTCTG GGAGTGAAG
 801 CGGACCCGAC TATAGCCTGA CCATTTCCAA CCTGGAACCA GAGGACATTG CCACCTATTA CTGTACAGC TATTTAAAGC
 881 TGGCCTATAC CTTTGGCGGA GGGACTAAGC TGGAGATCAA GCGAGGAGG GAGGATCAG GGGAGGGGG GAGCGGAGGC
 961 GGGGGAGTG GCGCGGAGG GTCAGAAATC GCTGACATT CTCCTCATAT CTCCTGCTTT GGTGCGGCA GACCCAGAA AAGAGACTGG
 1041 ACTGAGCTGT GCAGCCAGTG GCTGACATT TCTCTCATAT CTCCTGCTTT GGTGCGGCA GACCCAGAA AAGAGACTGG
 1121 AGTGGGTGGC TTCAATCTCT TCTGAGATG GATCCAGCA GTGAAAGGCA GATTCATAT TACTACTGCG CAAGAGGAT
 1201 AACGCACGGA ATATCCTGTA TCTGAGATG GATCCAGCA GTGAAAGGCA GATTCATAT TACTACTGCG CAAGAGGAT
 1281 AGTGGGGGG TATCTGGACG TGTGGGGAGC AGGCACTACC GTACCCGCTGT CTAGCACCA TACACCTGCA CCAAGGCCCTC
 1361 CCACACCCGC TCCACTATC GCTTCCAGC CACTGTCCCT GAGGCCCGAG GCTGCAGGC CAGCAGCTGG CGGAGCCGTG
 1441 CATACTAGGG GGTGGACTT CCGTTGGAC ATCTACATCT GGGCCCCACT GGCAGGGACA TCGGAGTCC TGTGCTGTG
 1521 CCTGGTCATC AACTGTACT GCAAGCGGG GCGCAAAAA CTGCTGTATA TCTTTAAGCA GCTTTTCATG AGACCAGTGC
 1601 AGACAACCCA GGAGGAAGAT GGTGCTCAT GCGGTTTCC CGAGGAGGAG GAAAGCGGCT GCGAGCTGAG GGTGAAGTTT
 1681 TCCTGCTCAG CAGATGCTCC TGCTTACCAG CAGGCCGAGA ACCAGCTGTA TAATGAGCTG AACCTGGGCA GACGCGAAGA
 1761 GTATGATGTG CTGGACAAAA GCGGGGGAAG AGACCCCGAA ATGGGAGGGA AGCCAAGGC AGGAAACCC CAGGAGGGCC
 1841 TGTACAAATGA GCTGCAGAG GACAAAATGG CAGAGGCTTA CAGTGAGATT GGGATGAAG GAGAGAGAC GAGGGGAAAA
 1921 GGGCACGATG GCTGTATCCA GGGCTGAGC ACAGCAACCA AAGATACTTA TGACGCACTG CACATGCAG CACTGCCACC
 2001 CAGATGATG GACGGCTCCG GTGCCCGTCA GTGGGCAGAG GGCACATCC CCACAGTCC CCAGAAAGTTG GGGGGAGGGG
 2081 TCGGCAATTG AACCGGTGCC TAGAGAAAGT GCGCGGGGT AAATGGGAA AGTGATGTCG TGTACTGGCT CCGCTTTTTT
 2161 CCGAGGGTG GGGAGAACG GTATATAAGT GCAGTAGTCG CCGTGAACGT TCTTTTTCG AACGGTTTG CCGCAGAAC
 2241 ACAGGTAAGT GCGTGTGTG GTCCCGCGG GCTGGCCTC TTACGGGT TTGCGCTTG ATGGCCTTG CGTGCTTGA ATACTTCCA
 2321 CTGGCTGCA GTAGTGATT CTGATCCCG AGCTTCGGT TGAAGTGGG TGGAGAGTT CGAGGCTTG CGCTTAAGGA
 2401 GCGCTTCGC CTCGTGCTTG AGTTGAGGC TGGCTGGGC GCTGGGGCC CCGGTGCGA ATCTGGTGGC ACCTTCGCGC
 2481 CTGCTCGCT GCTTTCGATA AGTCTTAGC CATTTAAAT TTTGATGAC CTGCTGCGC GCTTTTTC TGGCAAGATA
 2561 GCTTGTAATG TCGGGCCAA GATCTGACA CTGTTATTC GTTTTGGG GCGCGGGCG GCGACGGGC CCGTGCCTC
 2641 CAGGCACAT GTTCGGCGG GCGGGCCCTG CGAGCGGCG CACGAGAAAT CGGACGGGG TAGTCTCAAG CTGGCCGGCC
 2721 TGTCTGGTG CCTGGCCTCG CCGCGCCCTG TATCGCCCG CCGTGGCGG CAAGCTGGC CCGTTCGCA CCAGTTCGT
 2801 GAGCGAAAG ATGGCGCTT CCGCGCCCTG CTCAGGGAG CTCAAAATGG AGGACGCGC GTCGGGGA GCGGGCGGT
 2881 GATCACCCA CACAAAGGA AAGGCTCTT CGTCTCTAG CCGTCTCTG ATGTGACTC ACGGAGTACC GGGCGCGTC
 2961 CAGGCACCTC GATTAGTTCT CAGCTTTTG GACTACGTCG TCTTTAGTT GGGGGGAGG GTTTTATGCG ATGAGATTTC
 3041 CCACACTGA GTGGGTGGG ACTGAAGTTA GGCACGCTG GCACCTGAT TAATTCTCT TGAATTTGC CTTTTTGAG
 3121 TTTGGATCTT GGTTCATTCT CAAGCCTCAG ACAGTGGTTC AAAGTTTTT TCTTCCATT CAGGTGTCG GACCCGGGG
 3201 CTTCCACCAT GGTCTGCTCCT GTGACCGCAC TGTGCTGTCG CTTGGCTCTG CTGCTGCAG CCGCAAGACC TGCCGCATAC

FIG. 36C

SEQ ID NO:22 continued

3281 AAGGATATTC AGATGACTCA GACCACAAGC TCCTTGAGCG CTCCCTGGG AGACCGAGTG ACAATCTCTT GCAGTGCATC
3361 ACAGGGAATT AGCAACTACC TGAATTGGTA TCAGCAGAAG CCAGATGGCA CTGTGAAACT GGTGATCTAC TATACCTCTA
3441 GTCTGCACAG TGGGGTCCCC TCAGGATTCA GCGGATCCGG CTCTGGGACA GACTACAGCC TGACTATCTC CAACCTGGAG
3521 CCGAAGATA TTGCCACCTA CTATTGCCAG CAGTACTCCA AGTGTGCTTA TACCTTTGGC GGGGGAACAA AGCTGGAGAT
3601 TAAAGGGGA GAGGAGGAA GCGAGGAGG AGGATCCGA GCGGGGGAT CTGGAGGAGG AGGAAGTGAG GTGCAGCTGG
3681 TCGAATCTGG AGGAGGACTG GTGAAGCCAG GTGAATCTCT GAACTGAGT TGTGCCGCTT CAGGCCCTGAC CTCTCTCAAGC
3761 TAGGCCATGA GCTGGGTGCG ACAGACACCT GAGAAGCGG TGAATGGGT CGTAGAGCG GTTCTGCGG GTTTCACATA
3841 CTATCCAGAC TCCGTGAAAG GCAGATTAC TATCTCTCGG GATAACGCA GAAATATTCT GTACCTGCG ATGAGTTTCA
3921 TGAGGAGCGA GGACACCGCA ATGTACTATT GTGCCAGGA CGAAGTGGC GGTATCTGAG ATGTCTGGG AGCTGGCACT
4001 ACCGTACCG TCTCCAGCGA GCAGAACTG ATTAGCGAAG AGACCTGAA AGATGAACTG TAA

FIG. 37A

PGK promoter-anti-human CD7 (TH69) CAR-EFS promoter- Anti-human CD7 (TH69) PEBL (SEQ ID NO:23)

1 ATTCTACCG GTAGGGGAG CGCTTTTCC AAGCAGTCT GGAGCATGCG CTTAGCAGC CCGCTGGG ACTTGGCGCT
81 ACACAAAGTG CCTCTGGCCT CGCACACATT CCACATCCAC CGGTAGGCG CAACCGGCTC GGTCTTTTGG TGGCCCCCTTC
161 GCGCCACCTT CTACTCCTCC CCTAGTCAGG AAGTTCCCC CCGCCCCGCA GCTCGCGTCG TGCAGGACGT GACAAATGGA
241 AGTAGCAGT CTCACTAGTC TCGTGAGAT GGACAGCACC GGTGAGCAAT GGAAGCGGT AGGCTTTTGG GGCAGCGGCC
321 AATAGCAGT TTGCTCCTTC GCTTCTGG CTGAGAGGT GGAAGGGGT GGTCCGGG GCGGGCTCAG GCGCGGGCTC
401 AGGGCGGG GGGGCGCCG AAGTCTCTCC GAGGCCCGG CATCTGCAC GGTCAAAG GGCAGTCTG CCGCGCTGTT
481 CTCTCTTCC TCATCTCCG GCCTTTCGAG AATTGGCTT CCACCATGG TCTGCTGTG ACTGCCCTGC TGCTGCCCTT
561 GGCCTGCTG CTGCAGCTG CTAGACCCG CGCATACAAG GACATTCAGA TGACTCAGC TACATCCAGC CTGTGAGCTT
641 CCTGGGCGA TCGAGTGACT ATCAGCTGTT CAGCAAGCCA GGGGATCAGC AATTACCTGA ACTGGTACCA GCAGAAGCCC
721 GACGGAATG TCAAGCTGCT GATCTACTAT ACTTCCAGTC TGCATAGCG GGTCCCTAGC CGATTCTCTG GGAGTGGAG
801 CGGCACCGAC TATAGCCTGA CCATTTCGA CCTGGAACCA GAGGACATTG CCACCTATTA CTGTACGAC TATTCAAAGC
881 TGCCCTATAC CTTTGGCGA GGGACTAAGC TGAGATCAA GCGAGGAGG GAGGATCAG GGGAGGGGG GAGCGGAGGC
961 GGGGGGAGT GCGCGGAGG GTCAGAAGTC CAGTGTGTCG AGAGTGGGG CGGACTGTTG AAACCTGGG GCTCTCTGAA
1041 ACTGAGCTGT GCAGCCAGT GCCTGACATT CTCCTCATAT GCTATGTCTT GGGTGGGCA AAGAGACTGG
1121 AFTGGGTGG TTCAATCTCT TCCGGGGCT TCACTTACTA TCCTGACAG GTGAAAGCA GATTCACTAT CTCAGGAT
1201 AACGCACGGA ATATCTGTA TCTGCAGAT AGCTCACTGA GATCCGAGG CACCGCAATG TACTACTGCG CAAGAGACGA
1281 AFTGCGGGG TATCTGGAG TGTGGGAGC AGGCACTACC GTACCTGAG TACACCTGCA CCAAGGCCTC
1361 CCACACCCG TCCCACTATC GCTTCCCAG CACTGTCCCT GAGGCCGAG GCCTGCAGG CAGCAGCTG CGGAGCCGTG

FIG. 37B

SEQ ID NO:23 continued

1441 CATACTAGGG GGCTGGACTT CGTTGCGAC ATCTACATCT GGGCCCCACT GGCAGGGACA TGCGAGTCC TGCTGTGTC
 1521 CCTGGTCATC AACTGTACT GCAAGCGGG GCGCAAAAA CTGCTGTATA TCTTTAAGCA GCCTTTCATG AGACCAATGC
 1601 AGACAACCCA GGAGGAAGAT GGGTGCTCAT GCCGGTTTCC CGAGGAGGAG GAAAGCGGCT GCGAGCTGAG GGTGAAGTTT
 1681 TCCCGCTCAG CAGATGCTCC TGCTTACCAG CAGGGCCAGA ACCAGCTGTA TAATGAGCTG AACCTGGGCA GACGCGAAGA
 1761 GTATGATGTG CTGGACAAAA GCGGGGGAAG AGACCCCGAA ATGGGAGGGA AGCAAGGCG GAAAAACCCC CAGGAGGGCC
 1841 TGTACAATGA GCTGCAGAAG GACAAAATGG CAGAGGCTTA CAGTGAGATT GGGATGAAGG GAGAGAGACG GAGGGGAAAA
 1921 GGGCACGATG GCCTGTACCA GGGCTGAGC ACAGCAACCA AAGATACTTA TGACGCACTG CACATGCAGG CACTGCCACC
 2001 CAGATGATG GACGGGCAGA GCGACATCG CCGACAGTCC CCGAGAAATT GGGGGGAGGG GTCCGCAATT GAACCGGTGC
 2081 CTAGAGAAAG TGGCGCGGG TAACTGGGA AAGTGATGTC GTGTACTGGC TCCGCTTTT TCCGAGGGT GGGGGAGAAC
 2161 CGTATATAAG TGCAGTAGTC GCCGTGAACG TTCTTTTTCG CAACGGGTTT GCGGCCAGAA CACAGGTGTC GTGACCGCGG
 2241 GTCTAGAGGA TCCGGTACTC GAGGAACCTGA AAAACACAGAA AGTTAACTGG TAAGTTTAGT CTTTGTGCT TTTATTTTCA
 2321 GTCCGGATC CGTGTTGGT GCAAAATCAA GAACTGCTCC TCAGTGGATG TTGCTTTTAC TTCTAGCCCG GGGGCTTCCA
 2401 CCATGGCTCT GCCTGTGACC GCACTGCTGC TGCCCTGGC TGTGCTGCTG CAGCCGCAA GACCTGCCG APACAAGGAT
 2481 ATTCAGATGA CTCAGACCAC AAGCTCCCTG AGCCCTCCC TGGGAGACCG AGTGACAATC TCTTGCACTG CATCACAGG
 2561 AATTAGCAAC TACCTGAATT GGTATCAGCA GAGCCAGAT GGCACCTGTA AACTGCTGAT CTACTATACC TTAGTCTGC
 2641 ACAGTGGGT CCCTCACGA TTCAGCGGAT CCGCTCTGG GACAGACTAC AGCTGACTA TCTCCAACCT GGAGCCCGAA
 2721 GATATGCCA CCTACTATTG CCAGCAGTAC TCCAAGCTGC CTATACCTT TGGCGGGGA ACAAGCTGG AGATTAAAAG
 2801 GGGAGGAGGA GGAAGCGGAG GAGGAGGATC CCGAGGCGG GATCTGGAG GAGGAGGAAG TGAGGTGCAG CTGGTCGAAT
 2881 CTGGAGGAGG ACTGGTGAAG CCAGGAGGAT CTCTGAACT GAGTTGTGCC GCTTCAGGCC TGACCTTCTC AAGCTACGCC
 2961 ATGAGCTGGG TGGACACAGC ACCTGAGAAG CGCTGGAAT GGTCTGCTAG CATCTCCTCT GCGGGGTTCA CATACTATCC
 3041 AAGTCCGTG AAGGCAGAT TTACTATCTC TCGGGATAAC GCAAGAAATA TTCTGTACCT GCAGATGAGT TCACTGAGGA
 3121 GCGAGGACAC CGCAATGTAC TATGTGCCA GGGACGAAGT GCGCGGCTAT CTGGATGTCT GGGAGCTGG CACTACCGTC
 3201 ACCGTCTCCA GCGAGCAGAA ACTGATTAGC GAAGAGGACC TGAAGATGA ACTGTAA

FIG. 38

Anti CD7 (TH69) PEBL (SEQ ID NO:24)

1 MALPVTALL PLALLHAAR PAAYKDIQMT QTSSLSASL GDRVITSCSA SQGISNYLNW YQOKPDGTVK LLIYYTSSLH
81 SGVPSRFRSG GSGTDYSLTI SNLEPEDIAT YYCQYQSKLP YTFGGGTKLE IKR//GGGGSG GSGGGGGSG GGEVQVLES
161 GGGIVKPGGS LKLSCAASGL TFSSYAMSW RQTPCKRLEW VASISSGGFT YYPDSVKGRF TISRDNARNI LYLQMSLSLR
241 EDTAMYICAR DEVRGYLDV GAGTTVTSS EQKLISEEDL KDEL

FIG. 39

Anti CD7 (TH69) PEBL variant (SEQ ID NO:25)

1 FMALPVTALL LPLALLHAA RPAAYKDIQMT QTSSLSAS LGDRVITSCS ASQGISNYLNW YQOKPDGTV KLLIYYTSSL
81 HSGVPSRFRSG GSGTDYSLTI ISNLEPEDIA TYCQYQSKL PYTFGGGTKL EIKRGGGGSG GSGGGGGSG GGEVQVLE
161 SGGGLVKPGG SLKLSCAASG LTFSSYAMSW VRQTPCKRLE WVASISSGGF TYYPDSVKGR FTISRDNARN ILYLQMSLSLR
241 SEDTAMYICA RDEVRGYLDV WGAGTTVTVS SEQKLISEED LKDEL

FIG. 40

Anti CD7 (3A1F) PEBL (SEQ ID NO:26)

1 MALPVTALL PLALLHAAR PQVQLQESGA ELVKPGASVK LSCKASGYTF TSYMMHWVKQ RPQGLEWIG KINPSNGRTN
81 YNEKFKSKAT LTVDKSSSTA YMQLSLSTSE DSAVYYCARG GVIYDLYYA LDYWGQGTIV TVSSGGGGSG GSGGGGGSD
161 IELTQSPATL SVTPGDSVSL SCRASQISN NLHWYQOKSH ESPRLLIKSA SQSIGIPSR FSGSGSGTDF TLSINSVETE
241 DFGMYFCQQS NSWPYTFGGG TKLEIKREQ LISEEDLKDE L

FIG. 41

Anti CD7 (3A1F) PEBL variant (SEQ ID NO:27)

1 FMALPVTALL LPLALLHAA RPQVQLQESG AEIVKPGASV KLSCKASGYT FTSYMMHWVK QRPQGLEWI GKINPSNGRT
81 NYNEKFKSKA TLTVDKSSST AYMQLSSLTS EDSAVYYCAR GGVIYDLYY ALDYWGQGTI TVSSGGGGSG GSGGGGGGS
161 DIELTQSPAT LSVTPGDSVS LSCRASQIS NNLHWYQOKS HESPRLLIKS ASQSIGIPS RFGSGSGTDF FTLSINSVET
241 EDFGMYFCQQ SNSWPYTFGG GTKLEIKREQ KLISEEDLKDE EL

FIG. 42

Anti CD7 (TH69) CAR (SEQ ID NO:28)

1 MALPVTALLL PLALLHAAR PAAYKDIQMT QTSSLSASL GDRVTISCSA SQGISNYLNW YQKPDGTVK LLIYTTSSLH
81 SGVPSRFSGS GSGTDYSLTI SNLEPEDIAT YCQYYSKLP YTFGGGTKLE IKRGGGGSGG GSGGGGGSGG GGSEVQLVES
161 GGGLVKPGGS LKLSCAASGL TFSSYAMSW RQPEKRLEW VASISSGGFT YPDSVKGRF TISRDNARNI LYLMSSSLRS
241 EDTAMYICAR DEVRGYLDVW GAGTTVTVSS TTPAPRPPT PAPTIASQPL SLRPEACRPA AGGAVHTRGL DFACDIYIWA
321 PLAGTCGVLL LSLVITLYCK RGRKKLLYIF KQPFMRPVQT TQEDGCSCR FPEEEGGCE LRVKFSRSAD APAYQQGQNO
401 LYNEINLGRR EYDVLDKRR GRDPEMGKP RRKNPQEGLY NELQDKMAE AYSEIGMKE RRRKGHDGL YQGLSTATKD
481 TYDALHMOAL PPR

FIG. 43

Anti CD7 (TH69) CAR variant (SEQ ID NO:29)

1 MALPVTALLL PLALLHAAR PAAYKDIQMT QTSSLSASL GDRVTISCSA SQGISNYLNW YQKPDGTVK LLIYTTSSLH
81 SGVPSRFSGS GSGTDYSLTI SNLEPEDIAT YCQYYSKLP YTFGGGTKLE IKRGGGGSGG GSGGGGGSGG GGSEVQLVES
161 GGGLVKPGGS LKLSCAASGL TFSSYAMSW RQPEKRLEW VASISSGGFT YPDSVKGRF TISRDNARNI LYLMSSSLRS
241 EDTAMYICAR DEVRGYLDVW GAGTTVTVSS TTPAPRPPT PAPTIASQPL SLRPEACRPA AGGAVHTRGL DFACDIYIWA
321 PLAGTCGVLL LSLVITLYCK RGRKKLLYIF KQPFMRPVQT TQEDGCSCR FPEEEGGCE LRVKFSRSAD APAYQQGQNO
401 LYNEINLGRR EYDVLDKRR GRDPEMGKP RRKNPQEGLY NELQDKMAE AYSEIGMKE RRRKGHDGL YQGLSTATKD
481 TYDALHMOAL PPRGSGATNF SLLKQAGDVE ENPG

FIG. 44

Anti CD7 (3A1F) CAR (SEQ ID NO:30)

1 MALPVTALLL PLALLHAAR PQVQLQESGA ELVKPGASVK LSKASGYTF TSYMHWVKQ RPKQGLEWIG KINPSNGRTN
81 YNEKFSKAT LTVDKSSSTA YMQLSSTLSE DSAVYICARG GYYDLYYA LDYWGQTTV TVSSGGGGSG GSGSGGGGSD
161 IELTQSPATL SVTPGDSVSL SCRASQISN NLHWYQKSH ESPRLIKSA SQSISGIPSR FSGSGSGTDF TISINSVETE
241 DFGMYFCQQS NSWPYTFGGG TKLEIKRITT PAPRPPTAP TIASQPLSLR PEACRPAAG AVHTRGLDFA CDIYIWAFLA
321 GTCGVLLSL VITLYCKRGR KLLYIFKQP FMRPVQTQE EDGSCRFPE EEEGGCELRV KFSRSADAPA YQQGQNLVN
401 ELNLGRREY DVLDKRRGRD PEMGKPRRK NPOEGLYNEL QDKMAEAYS EIGMKERRR GRKHDGLYQG LSTATKDTYD
481 ALHMOALPPR

FIG. 45

Anti CD7 (3A1F) CAR variant (SEQ ID NO:31)

1 MALPVTALLL PLALLHAAR PQVQLQESGA ELVKPGASVK LSCKASGYTF TSYWMHWVKQ RPKQGLEWIG KINPSNGRTN
81 YNEKFKSKAT LTVDKSSSTA YMQLSLTSE DSAVYICARG GYYDLYYYA LDYWGQGTIV TVSSGGGGSG GGGSGGGSD
161 IELTQSPATL SVTPGDSVSL SCRASQISN NLHWYQKSH ESPRLLIKSA SQSISGIPSR FSGSGSGTDF TLSINSVETE
241 DFGMYFCQSS NSWPYTFGGG TKLEIKRITT PPRPPTPAP TIASQPLSLR PEACRPAAGG AVHTRGLDFA CDIYIWAPLA
321 GTCGVLLLSL VITLYCKRGR KLLYIFKQP FMRPVQTTQE EDGSCRFPE EEEGGCELRV KFSRSADAPA YQOGONOLYN
401 ELNLGRREY DVLDKRRGRD PEMGKPRRK NPQEGLYNEL QDKMAEAYS EIGMKGERRR KGKHDGLYQG LSTATKDTYD
481 ALHMOALPPR GSGATNFSLL KQAGDVEENP G

FIG. 46

Anti-human CD7 (TH69) CAR-p2A- Anti-human CD7 (TH69) PEBL (SEQ ID NO:95)

1 MALPVTALLL PLALLHAAR PAAYKDIQMT QTSSLSASL GDRVITISCSA SQGISNYLNV YQKPKDGTVK LLIYYTSSLH
81 SGVPSRFSGS GSGTDYSLTI SNLEPEDIAI YYCQYSKLP YTFGGGKLE IKRGGGGSGG GSGGGGGSGG GGSEVQLVES
161 GGLVKKPGS LKLSCAASGL TFSSYAMSW RQPEKRLEW VASISSGGFT YPDSVKGRF TISRDNARNI LYIQMSSLRS
241 EDTAMYCAR DEVRGYLDVW GAGTTVTVSS TTPAPRPPT PAPTIASQPL SLRPEACRPA AGGAVHTRGL DFACDIYIWA
321 PLAGTCGVLL LSLVITLYCK RGRKKLIYIF KQPMRPVQT TQEDGCSCR FPEEEEGGCE LRVKFSRSAD APAYQQGQNO
401 LYNELNLGR EYDVLDKRR GRDPEMGKP RRKNPQEGLY NELQDKMAE AYSEIGMKGE RRRKGHDGL YQGLSTATKD
481 TYDALHMQAL PPRGSGATNF SLLKQAGDVE ENPGMALPV TALLPLALL LHAARPAAYK DIQMTOTTSS LSASLGDRVIT
561 ISCSAQGIS NYLNWYQOKP DGTVKLLIYY TSSLHSGVPS RFGSGSGTD YSLTISNLEP EDIATYYCQQ YSKLPYTFGG
641 GTKLEIKRG GSGGGGGSGG GSGGGGGSEV QLVESSGGGLV KPGSLKLSA AASGLTFSSY AMSWVRQTPK KRLWVASIS
721 SGGFTYTPDS VKGRFTISRDNARNILYLQM SSIRSEDTAM YYCARDEVIRG YLDVWGAGTT VTVSSEQKLI SEEDLKDEL